THE LITERARY GAZETTE;

AND

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THE BRITISH ASSOCIATION.

NINTH MEETING: BIRMINGHAM.

[Second Notice.]

BEFORE we proceed with our Report of the Proceedings of the British Association, we will offer a few remarks on the increased hostility and ridicule with which it has this year been assailed; and which, if we may judge from the frequent allusions to the subject, have made a considerable sensation. The question of Religion has been introduced by the Dean of York and a number of writers in religious periodicals; whilst several of our ablest and most powerful journals have attacked the Association on the grounds of its inutility in the cause of Science,—its vain-gloriousness, its gormandizing, and even its corrupt and jobbing administration.

Upon these points, having attended all the meetings since that of Cambridge, and been observant of every point connected with them, we are induced to submit our honest testimony and candid opinion to the public.

On the polemical controversy, which appears to have been excited, chiefly, if not entirely, by the Geological Section, and by publications among the "Bridgewater Treatises" and elsewhere, too much has been said and written to render its revival, and the answers here given, on so many occasions, to the impugners of this science as being infidel, unchristian, and at war with Scripture and revelation, of any high degree of importance to the religious world. All that the friends of geology could do, was to dress in other phrases the arguments they have already, with so much ability, supported through the press; and it is not to be supposed that after-dinner speeches, or those of routine and compliment, are likely to be so powerful on so grave a matter as the mature reflections and compositions of the closet. They were proper and sufficient for the audiences to whom they were delivered, but if repeated in our reports, could not have so much weight with the surrounding and distant world as those which have been already circulated universally amongst every class of readers who concern themselves with the dispute. In some of our notices will be found the most pithy observations made by Mr. Vernon Harcourt, the Marquess of Northampton, Dr. Buckland, &c.; and we will not further involve ourselves in the unprofitable discussion, from which so little of good is promised to the faith in which the people of Great Britain live and worship their Creator. If the attacks have been intolerant and ignorant, as surely those which we have seen and heard have generally been, it has caused us some surprise to find that they are so sorely felt. We cannot tell whether religion is likely to suffer most from its assailants or defenders! If Bible history, and its superstructure of Christianity, can be overturned by the discovery of an Ichthyosaurus or an Encrinite, a tree fern or a sponge, their vindication is a folly, and their foundations, instead of the solid rock, are on a stratum of shifting sand.

With regard to the advantages which science has derived, and is destined to derive, from the meetings of the Association, if too much is not demanded on that score, a person must be prejudiced and blind beyond credibility to deny their beneficial influence. The collision of a number of clever men, the friction of their minds, could not take place without stimulating, informing, and improving every one of them. The general interchange of their ideas must of necessity produce a good and a great effect; which could never be produced by the study of their productions, even allowing that these were made accessible to, and could be consulted by, all. It is personal contact which spreads and infuses vigour into these communications, and there is no setting a limit to the possible and probable results of such intercourse. Another recommendation, and a gratifying one, is the generation of friendly and kind feelings among so many engaged in similar pursuits, who would never have known any thing of each other but for the British Association. Their consequent correspondence is another source whence science must be aided and advanced. We are bound to say, that we never witnessed less of jealousies and more of cordial co-operation among men than at these meetings. In the higher branches of knowledge, the former does not seem to exist, and the latter is freely given; and even in these divisions, where individual interests come directly into conflict, there is really, in general, more to praise than to reprehend. It is true, when people have patents to defend, on which immense profits are expected; or rail-roads to puff, in which they are largely embarked; or inventions to get into notice, which will reward their ingenuity; or manufactures to exalt, by enhancing the fame and value of which they will fill their pockets, there is quite as much of human frailty and human selfishness exhibited at the British Association, as in the transactions of trade and business elsewhere. This cannot be avoided, but it is not the prevailing feature; and where there is sterling gold, it would be unjust to quarrel with the small quantity of alloy.

We do not mean to affirm that the doings in the Sections, the extempore and often verbose debates, the questions and suggestions of parties who occupy the time by interruptions of the most irrelevant description, and its like occupation, or rather waste, by trite and familiar matters, which have already passed through the London Societies, and been promulgated by the publications devoted to these pursuits, are either the best portions of the proceedings, or of use to science. Some more care is advisable in respect to them; and the sectional committees might accomplish reforms in regard to these blots.

But the most important work of the Association is the annual collection of views, in which the progress and existing state of the sciences are traced and laid down for the guidance of every soul engaged in their study. Here they find land-marks by which to be guided; by which they are prevented from following erroneous courses, and saved the trouble of travelling over grounds already explored and occupied. We must acknowledge that this is an immense service to science; and we have only to look at the volumes published by the Association, to have sufficient vouchers for this truth.

The procuration of the Antarctic Expedition, alone, would be an answer to the cry against the Association for trifling and inutility. Suggested by Major Sabine, the Association took it up heartily, and backed by the influence of the Duke of Northumberland, and the Marquess of Northampton, President of the Royal Society, all the delays in government movements were overcome, and this most interesting voyage is now in actual progress under the happiest auspices.

The other charges against these meetings are hardly worth combating. The harmless flatteries which occur in the oratory, and the inclination to lay hold and boast too much of trivial things in favour of the Association and its leading characters, are only the *soft solder* of the machine, and do not impair its real value. The gormandizing is an exaggeration of the hospitalities enjoyed by the members, which, though generously and profusely bestowed by the various localities to which they have been invited, never led to intemperance or any unbecoming act. It is a sad mistake to fancy that the philosophical and social are irreconcilable. On the contrary, their union is one of beauty and benefit; the philosophical adorns and exalts the social, the social cheers and animates philosophy.

There is another good result arising from these meetings, which we ought to notice before saying a few words on the imputation of jobbing; we mean the intelligence received by the members respecting things with which they were unacquainted, in return for the knowledge and impulse communicated by them to the quarters to which they have gone. The inspection of many manufacturing and mechanical processes, and the examination of mines and natural products, are of infinite use in the cultivation of the mind; and the stimulus given to the industry and inventiveness of the districts where the Association has held its annual concourse, has been made apparent in so many instances that it would be absurd to insist upon it. Our last and present Numbers furnish proof enough to satisfy every sceptic. The drawbacks of bustle and want of time, though they are felt as evils, do not hinder the working of the system to much that is of individual and national advantage, both as relates to commercial and scientific objects.

We now turn to the last point of objection, which has been embodied and advanced by our influential contemporary "The Times" newspaper.* We are convinced, that had the writer been present at any of the meetings, or had he impartially analysed the accounts and expenditure of the Association from first to last, the conclusion of his auditing would have been

* "It is impossible that any reporter not acquainted with all the subjects can give an accurate narrative of the lectures and discussions; and an inaccurate one is worse than useless—it puzzles and misleads. Besides, we have, we confess, a great contempt for this mode of dispensing knowledge, where beef and botany, champagne and chemistry, geology and goose-liver pies, are discussed together, to the great confusion of the digestive faculties both of the intellect and the stomach. We have felt from the beginning that there is a great deal of folly and humbug in the concoction and objects of this pretended Scientific Association; and latterly, we have had reason to

directly the opposite. The grants of the Institution are before the public, and when it is seen that in eight years a fund and property of above 6000*l.* have been accumulated, they cannot be deemed prodigal. The two or three official salaries are very small, and far below the average of service; the mass of the business being performed gratuitously and without reward. The sums placed at the disposal of individuals for scientific purposes have been economically employed, and always within the bounds limited; and with respect to the objects aimed at, it is scarcely possible to throw a doubt upon their utility, or a suspicion upon their motives.

And when we look at the persons who have taken the lead in the Association, and have adhered to it through good and evil report, can we doubt either its intentions, its conduct, or its efficacy? Its presidents and vice-presidents have been men of all parties, and of the highest honour and distinction. At its meetings, the four great national universities of Oxford, Cambridge, Edinburgh, and Dublin, have been constantly represented by their chief ornaments; and the University of London, King's College, Durham University, Aberdeen, Glasgow, St. Andrew's, have all taken active and prominent parts in the measures adopted. Nor have the most eminent philosophers in the grand Republic of Science been absent from this her parliament: on the contrary, so vast a majority of the highest have lent their efforts to the design, that it would be very difficult to make out a short list of absentees belonging to that class.*

The attendance and approbation of foreigners of universal reputation is another strong proof of the value of this Association. To their estimate of its extreme importance we can bear our own testimony; for we have often heard it from the mouths of those with whose fame all Europe rings.

Another incidental point may also be adduced; viz. its tendency to bring forward modest merit, which would otherwise be doomed to bloom unseen, and wither in the desert air. Who can tell what future Watts, Peels, Arkwrights, and Smeatons, may be the fruit of these cheering opportunities? Already in the ranks of the Members are enrolled some gratifying instances of celebrity, cherished into an extended sphere of usefulness by its nourishment; and the seeds have unquestionably been sown of many more examples of the same auspicious order. At the close of our Report of the present meeting we may probably glance at the items voted, and fairly canvass them in support of these facts.

Pursuing our usual course of abridging what can be abridged with advantage, and winnowing the new and useful from the theoretical and unproductive, in the Proceedings of the British Association, we revert to Monday, in order to fill up the gaps we left in its Report, so as to make room for papers afterwards read; and which we considered to possess more public interest and general importance.*

In Section B, on Monday, the papers appointed for which were all we could indicate, Professor Graham took the chair, and opened the proceedings by taking a view of recent improvements in chemical science. He particularly pointed attention to the great talents displayed by M. Schönbein, of Basle, in that important branch of science, "Organic Chemistry," and expressed a hope that the meeting would be favoured with the presence of that distinguished foreigner. The learned chairman also animadverted on *M. Dumas's* "Law of Substitutions," the source of so many valuable discoveries. The first experiment was with chlorine on organic matter; and it was found that an atom of chlorine was substituted for every atom of hydrogen, separated in the form of hydrochloric acid. In the same manner oxygen substituted itself for hydrogen in acetous fermentation; and chloro-acetic acid substituted chlorine for oxygen. The discoveries and experiments of Faraday in regard to the chlorides of carbon, also pursued by M. Regnault, and the binary theory of M. Leibig, were alluded to, as beautiful examples of chemical progress. The prohibition, or nearly so, of the exportation of sulphur from Sicily (our principal mart) was noticed; and the Professor spoke in praise of an invention of Mr. Gossage, of Stoke Prior, near Birmingham, for the reduction of this material, so important to chemists and manufacturers, from soda waste.

Professor Hare's paper possessed no novelty, and has already been published and reviewed.

Mr. Mallet's letter simply stated, that he was continuing his Experiments on the Action of Water on Cast-iron, and would require, therefore, a continuation of the 50*l.* grant made by the Association last year.

The communication from Dr. Boswell Reid, of Edinburgh, accompanied a chemical instrument, which, by mechanical arrangement, shewed the composition of different substances, and which greatly resembled the numerical machines, formed of wood and wire, employed for calculations in China. Some improvement was suggested by Dr. Daubeny.

Mr. Couthupe explained his Improved Method for graduating Glass Tubes for Eudiometrical Purposes, which Professor Graham thought might be equally useful for medical measurements. Also another Air Apparatus, for determining the quantity of carbonic acid in the atmosphere, which did not seem to be so much approved as Dr. Dalton's; and several gentlemen present mentioned contrivances of their own for the same object.

Dr. Mackay read 'A Communication upon a Bark which he had lately received from South America.' He stated that, in a brief sketch of its reputed virtues which accompanied it, it was said to possess febrifuge properties in an eminent degree, which was rendered exceedingly probable from its containing a bitter principle in considerable quantity. Its febrifuge qualities are stated to be equal to those of the best Peruvian bark, for which it has been successfully substituted. Dr. M. submitted to the inspection of the Section specimens of two different oils, obtained from the bark by distillation with water, which, though existing in the same plant, and obtained by the same process, present marked distinctions. The one, being of less specific gravity than the other, floated upon the surface of that which was distilled along with it, while the other being considerably heavier, sunk to the bottom of the receiver. Both, when fresh, were transparent and colourless; but in a few days they changed to a yellow colour, the heavier oil becoming of a deeper tinge than the other. In smell the oils differ perceptibly, that of the heavier being fatty and unpleasant, while the odour of the lighter is aromatic and agreeable. In taste they are equally acrid and disagreeable. The specific gravity of the lighter oil is 0·949, that of the heavier is 1·028, both having been examined several days after their preparation. Upon exposing them to a temperature of 18° F. no effect was produced upon the lighter oil, but in the heavier a great quantity of needle-shape crystals were observed, which, however, speedily dissolved upon the phial being removed out of the febrifuging mixture: the mineral acids decompose them, connecting both oils with fluids of a blood-red colour. In a chemical point of view the oils referred to are interesting, on account of their presenting such marked distinctions in colour, smell, specific gravity, and the effect of cold upon them, while they are the produce of the same plant, and procured by the same process. Dr. M. concluded by expressing his expectation of shortly being able to communicate to the public more important results from the analysis of the same plant, particularly as regards its bitter principle.—*From the "Birmingham Journal," to which, we presume, Dr. M. communicated the account.—Ed. L. G.*

Baron de Mesnil's safety-lamp was noticed in our last. It differs from Davy's, in having the chimney left open. Professor Graham suggested, that to absorb the carbonic acid gas, the cause of these calamitous explosions in coal-mines and other subterraneous works, an equal mixture of dry-slaked lime and Glauber's salt might be very effectually employed.

In Section C., after the discussion, which we reported at full length, Mr. J. E. Marshall read a paper 'On the Silurian Formation of Rocks, from Shap to Casterton Fell, in Westmoreland;' and Mr. Strickland put forward the following printed queries respecting the superficial gravel in the neighbourhood of Birmingham.—1. Does the gravel near Birmingham ever contain chalk flints, fragments of oolite, &c., which may indicate a southern origin, or is it wholly of northern extraction? 2. Does it ever contain marine shells? 3. Are these shells of existing or extinct species? 4. Does it ever contain bones of terrestrial mammalia, or fresh-water shells? 5. What are the circumstances of position, material, &c., of

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think that there is something worse—we mean, that gross jobbing has tainted the administration of the Society. We shall, perhaps, have occasion to say a few words on this subject. Meantime, we shall conclude by quoting the words of a friend, that 'the systematic concealment of important information from those who are called upon to decide, and the support which men of high character and station have, by cajolery, been duped into giving to contemptible measures,' have disgraced the Society, and paralysed all its powers of usefulness. We believe that Sir John Herschel, Mr. Babbage, and Mr. Sedgwick, among others, have withdrawn their countenance from the Association."—*The Times.*

* Of the three names mentioned as reported deserters by "The Times," Sir J. Herschel and Professor Sedgwick certainly continue among the warmest friends of the Association.—*Ed. L. G.*

* "The Times" is quite right in its opinion that attempted reports of *all* these proceedings, taken at the various Sections, must of necessity be very inaccurate, and lead to error, rather than accurate intelligence. But, still, a considerable portion of them may be obtained, and preserved in a way to render them valuable to science, both at home and abroad. Discrimination is necessary: and we would meddle with none except such as would convey correct information. Why engross our pages with repetitions of subjects, experiments, essays, &c., already familiar to the world, either from newspaper publicity, or the details of the London Societies, which have appeared in so many shapes? But such matters as Mr. Fox Talbot's explanations on photogenic drawings, and M. Daguerre's process (see our last No., p. 546); Mr. Lyell on the chalk and gravel formations, in Section C. (*Ibid.* p. 548); Mr. Hawkins on paving—an immediate practical question (*Ibid.* p. 549); Mr. Webb Hall on accelerating the growth of wheat—the only agricultural paper at the meeting, and one of the utmost importance (*Ibid.* pp. 550–1); Dr. Thomson on indigestion—another subject of universal interest (*Ibid.* pp. 551–2); Mr. Grove on the voltaic battery—also taken out of the routine order (*Ibid.* p. 552); and Mr. Murchison's valuable geological communication on the carboniferous and Devonian systems, in Westphalia and the north of Germany: such matters, we repeat, being fully and accurately given, must exercise a very instructive influence on the public mind. We shall merely notice that Mr. Murchison's abstract ought to have been among our supplementary papers (after col. 3, p. 550), and not immediately under the head of "*Evening Meeting.*"

the gravel in which mammalian bones or fresh-water shells are found? and is it distinguishable in any respect from the gravel in which marine remains are found? 6. Are mammalian remains ever found in company with marine shells?

SECTION G.—*Mechanical Science.*

Mr. Scott Russell, 'On the most Economical Proportion of Power to Tonnage in Steam-vessels.'—The rule by which most proprietors of steam-vessels have been guided is the application of power in small proportion to tonnage; but where velocity was the chief object, higher proportional power has been employed, with a great expenditure of fuel, and not with the ratio of increase to the velocity; or high powers and large consumption of fuel have been attended with only a slight increase of velocity; and, therefore, the employment of low powers, with low velocities, would appear to be most economical. But this conclusion has not been borne out; and, by an examination of the books of expenditure of fuel, belonging to several companies, he had found that experience had proved the use of high steam powers and high velocities more economical than low ones. This had been attributed to Mr. Russell's wave principle, and he had, therefore, carefully investigated the subject. The result at which he had arrived, appeared to him quite new and very remarkable. The general principle was:—that in a voyage by a steam-vessel in the open sea, exposed, of course, to adverse winds, there is a certain high velocity and high portion of power which may be accomplished with less expenditure of fuel and of room than at a lower speed with less power. This was proved arithmetically, and by a formula, in relation to the same vessel, with different powers of engine, whereby any other case may be determined.

Fair Weather.—1200 tons, 400 horse-power, 9 miles an hour, 216 miles a-day, 1 ton of coal an hour; 2160 miles in 10 days, 240 tons of coal.

1200 tons, 500 horse-power, 10 miles an hour, 240 miles a-day, 1¼ ton of coal an hour; 2160 miles in 9 days, 270 tons of coal.

Adverse Weather.—1200 tons, 400 horse-power, 5 miles an hour, 120 miles a-day, 1 ton of coal an hour; 2160 miles in 18 days, 436 tons of coal.

1200 tons, 500 horse-power, 6¾ miles an hour, 162 miles a-day, 1¼ tons of coal an hour; 2160 miles in 13 and one-fifth days, 395 tons of coal.

General Formula.—Let v represent the velocity of a given steam-vessel in a fair weather voyage; v', the same vessel in an adverse weather voyage; v'', a vessel of higher power in the fair one; v''', the same in the adverse one; p, the power of the former vessel; p', latter vessel.—

$\therefore \sqrt{v''' - (v - v')} = v''' = \sqrt{v}\sqrt{\frac{p'}{p}} - (v - v')$

$v\frac{p'}{p} = \sqrt{v'' - (v - v')}$ in the case of equal expense, when the highest proportion of power that will be economical in fuel may be at once obtained.

Dr. Lardner observed, that it was a new theory; but, from Mr. Russell's exposition, he was satisfied with its accuracy.

Mr. Russell stated, in answer to a question, that the principle was only true in reference to long voyages, because where vessels were not exposed to continued adverse weather, a great additional power would only be an additional expense.

[We must still for the present reserve the Statistics, which are long, for future notice.]

TUESDAY.

SECTION A.—*Mathematics and Physics.*

1. Mr. J. S. Russell, 'Report of the Committee on Waves' (Himself and Sir J. Robison).
2. Professor Whewell's remarks 'On the Tides of the Frozen Ocean,' by Lütke.
3. Professor Whewell's remarks 'On Captain Fitzroy's Views respecting Tides.'
4. Sir J. Herschel, 'Report of Application to Government for Increased Instrumental Power and Assistance at the Royal Observatory at the Cape of Good Hope.'
5. Sir J. Herschel, 'Report of Reduction of Meteorological Observations.'
6. Professor Forbes, 'On the Use of Mica for the Polarisation of Light.'
7. Mr. Goddard, 'On the Use of the Oxy-Hydrogen Microscope in Experiments on the Polarisation of Light.'
8. Mr. Addison's 'Meteorological Observations at Great Malvern.'
9. Colonel Sykes, 'On the Meteorology of the Ghats of Western India.'

1. Mr. Russell observed, that the committee had continued and almost concluded their inquiries. These had been directed, in the first place, to the determination of the nature and laws of the wave of translation, as distinct from the wave of oscillation. Extended researches have confirmed former experience. The form of the wave of translation is that to which the term hemicycloid has been affixed; and the wave obeys the laws as stated in former reports. The laws had been obtained from the equations of a place on the hypothesis that the movement of the atoms of water was not infinitely small as supposed; and highly satisfactory conclusions, in support of these views, had been derived from the labours of Professor Kelland. In the next place, the inquiry had been directed to the connexion between the motion of the wave and the resistance offered to floating bodies. Former views had been confirmed in a highly satisfactory manner. The experiments had been conducted on a more striking scale. The phenomenon of a vessel skimming the surface of the water, the resistance of the wave having been overcome by a high velocity, had been exhibited in an unusual degree. The prow divided the wave, which rose on each side, in a remarkable manner, to a height of three times the depth of the vessel, spreading out from it; the upper surface appearing as a thin film, and resembling wings to the moving body. The third inquiry was as to the form of a solid of least resistance in a practical form. Mr. Russell had inferred, from theoretical views, that a certain form which he termed the wave-form, would be the form of least resistance and least displacement. This inference had been confirmed last year by experiment,—by calculation and by practical advantages. The questionable proof of the two latter confirmations were adduced: a clergyman of Scotland, the Rev. Mr. Brodie, had been induced by the account of the proceedings of the British Association to investigate and to test mathematically the truth of Mr. Russell's inference, and he had by a totally different process arrived at the same conclusion. And Mr. Ashton Smith, of Wales, has built a steamer of 660 tons burden, and 220 horse power, in accordance with the new form; she is the fastest vessel in Britain, she realises fifteen miles an hour; and whilst other vessels at much less speed raise up the wave in white foam under their bows, the Fire King moves it aside and no single particle of white spray is perceived. Another proof of the permanent benefit likely to accrue to the naval interest is the fact, that many eminent ship-builders have at last entered upon the question which before they would never entertain; and at the present time there are four or five vessels of large size being built on the new wave principle. The last subject of the experiments was the application of this knowledge of waves to the terrestrial mechanism of the tidal wave. It was, in fact, a continuation of the inquiry of Professors Lubbock and Whewell, who had explored this wave until it ceased to be effected by celestial influence. The committee had come to the conclusion that the tidal wave is a great wave of translation, but had not as yet carried out their experiments sufficiently to enable them to decide the mechanical properties of its propagation from shore to shore and up estuaries and rivers. To this end observations had been made in uniform channels, also in channels not uniform, especially in the Firth of Forth, where there were several stations established. The results, however, are not as yet complete; but a few phenomena had presented themselves, one of which was so striking that Mr. Russell could not refrain from describing it to the Section. In investigating the outline of the form of the wave, they found, to their astonishment, that in the Firth there were double tides—four instead of two—four high-waters and four low-waters a-day. And this phenomenon was observed, not at one point only, but at the series of stations. The wave, moreover, increased in magnitude as it ascended the river. This he considered it desirable to explain, and he thinks he sees the cause. The tidal wave which brings high-water to Great Britain, divides into two parts, the one goes up the English Channel and the other round the north of Ireland and Scotland, coming south to the Firth of Forth, but arriving later than the southern or English Channel wave already in the Firth. The larger northern one almost overtaking the smaller one at Stirling, where they are nearly coincident. In their passage up traces of two distinct waves have been observed, explaining, Mr. Russell thinks, the phenomenon of double tides; but he considers many accurate observations requisite to the proof. He believes the phenomenon to be very common, but not hitherto observed. Waves of translation never unite, they do not obey the laws of oscillation: they often coincide, but as often separate again, the larger and one of greater velocity, passing over the lesser, and on in its course. The lesser one, moreover, is not altered in form nor retarded in progress. Besides, waves of translation frequently cross each other at all angles, and retain their identity. The series of observations on this interesting subject will be complete next year.

Professor Forbes observed, with regard to the separation of the waves, that after two had blended into one, the ordinate of the joint wave would be the sum or difference of the ordinates of the waves, accordingly as the two waves coincided. Professor Whewell said, No; they will separate. Mr. Russell said they had often been found to do so. Professor Stevelly stated that, by the law of oscillation or the undulatory motion, the effect would be exactly as explained by Professor Forbes; but the motion of translation, from its very nature, as described by Mr. Russell at Newcastle, would cause the waves to separate. He attributed the difficulty Professor Forbes laboured under to his not having been present at the last meeting, when the minute account of the properties of the wave of translation was given.

2. This was a communication from Admiral Lütke, read by Professor Whewell. The admiral had traced the cotidal lines from North Cape, where those of Professor Whewell end, beyond Lapland to Nova Zembla; and had observed that to the eastward of Nova Zembla the tidal wave is scarcely perceptible. Professor Whewell remarked that the disappearance of the tide-wave in large tracts of sea, and the absence of tides in the centre of the Pacific, or of any wide waters, were at present anomalies. The Russian admiral further communicated that the diurnal inequality, supposed peculiar to one or two places, was well known to Russian navigators on the coast of Kamtschatka

and of North America. It was, therefore, he conceived, a general law.

3. Captain Fitzroy conceives that the tides of the Pacific are not the result of a progressive wave, which is the basis of Professor Whewell's researches; but that they are produced by a vast oscillation, by which the sides of the water would be raised high, whilst the centre would be at rest. Professor Whewell did not deny the possibility of such an oscillation. By this view also, some of the phenomena inconsistent with the equilibrium theory might be explained. But whether this motion be consistent with the forces exerted by the sun and moon, is an extremely difficult problem of hydronamics. He could not adopt Captain Fitzroy's views, but they were a kind of relation by no means hastily to be rejected.

Professor Whewell then took leave to present the 'Report on Tidal Waves,' received from Mr. Bunt, to whom, and to himself, a grant for the research had been voted, at the same time observing that it was not of a nature to be made intelligible to a general audience. This is a sufficient reason for its not appearing in our columns.

4, 5. Several letters from Sir John Herschel stated the progress that had been made in consequence of the grants for the reduction of meteorological observations at the equinoxes and solstices, and for the appointment of an efficient observer, &c., at the Cape of Good Hope. [Mr. Mann has been appointed, and other necessary steps taken].

6. Professor Forbes read a paper 'On the Use of Mica in Polarising Light;' and, after stating his method of employing it, expressed his opinion that it might be made very important towards explaining the nature of metallic reflection. Professor Lloyd agreed that this process might throw light upon the internal structure of metallic substances, and in other respects considered it to be highly important. By polarising light, either elliptically or circularly, in a superior way to any hitherto practised, it might lead to a termination of some of the difficulties which beset the inquiry. As Professor Forbes had found, on exposing mica to heat, that exceedingly thin laminæ were separated, the surfaces of which furnished these reflections, he supposed it likely that all metallic plates presented similar laminæ, on which depended their polarising influence. Professor Powell confirmed these opinions, and adduced instances of such laminæ polarising light, without affecting the image thrown upon the metal.

7. Mr. J. F. Goddard read a paper 'On the Oxy-Hydrogen Microscope, in exhibiting these Phenomena of Polarisation,' which consisted chiefly in the application of the means, and of results shewn in London exhibitions.

8. Mr. Addison read an excellent local paper (and well fitted to be considered with general comparative tables) 'On the Meteorology of Great Malvern for Four Years.' In answer to a leading question from Professor Powell, Mr. Addison gave an extraordinary relation of a flight of shooting stars, which he had seen below him from the top of the hill in Nov. 1832. These meteors resembled a shower of fire, and it was in a November fog. Professor Powell said, that on the 10th of this month he had witnessed a similar fall at Tunbridge Wells. They left trains of fire behind them, and their motion was from north to south. [The date curiously coincides with the American and other annual star fireworks.]

9. Some observations on barometrical and thermometrical variations, under such circumstances, were offered by Professor Stevelly, Mr. F. Baily, and Mr. Jeffreys (who had experimented on the Himalah Mountains); and a paper by Col. Sykes (kept from the meeting by his canvass for an East-India Directorship,—and we can hardly imagine a more worthy and accomplished candidate) was read, 'On the Meteorology of the Ghats,' and closed this sectional meeting.

SECTION B.—*Chemistry and Mineralogy.*

1. Mr. H. L. Pattinson, 'On Electrical Currents in Metallic Veins.'
2. Professor Hess, 'On Apparatus for conducting Organic Analysis.'
3. Professor Graham, 'On the Chemical Theory of the Voltaic Circle.'

Mr. H. L. Pattinson read a paper 'On Electrical Currents in Metallic Veins.' The writer undertook this investigation at the request of the Association last year at Newcastle; and, after detailing many experiments, he inclined to the *non*-current opinion, though it was possible, by the employment of more delicate tests, &c., that the contrary might be established.

Mr. Spencer opposed some experiments of his to those of Mr. Fox; and held, that the presence of two metals was not always necessary.

Dr. Golding Bird congratulated Mr. Pattinson on the accuracy of his experiments, and observed that as such currents were not detectable on the galvanometer, and susceptible of chemical action, his theory was very satisfactory.

A paper was read by Professor Hess, of Petersburg, 'On Professor Leibig's Apparatus for Analysing Organic Substances,' which was similar to that described in "Puggendorf's Journal" a few months ago, with the exception of passing oxygen through the tubes instead of atmospheric air.

Professor Graham, 'On the Theory of the Voltaic Circle,' entered into an explanation of the views now general as to the propagation of electrical induction through the fluid and solid elements of the Voltaic circle, by no circulation of the electricities, but by their displacement in the polar molecule. In a molecule of hydrochloric acid, for instance, the electricities are displaced, the positive goes to the atom of chlorine, and the negative to that of the hydrogen, and each retains the chemical affinity of the chlorine and hydrogen respectively. Mr. Graham wished to refer the phenomena directly to the chemical affinities, and to omit entirely the idea of electricities being possessed by the molecules. In short, he observed the term electricity, or chemical affinity, must give way. He then took hydrochloric acid as the type of exciting fluids; he gave to each molecule a pole, the one with an affinity for chlorine, which he termed *chlorous* affinity, instead of negative electricity; and the other with an affinity like that of zinc or hydrogen, which he termed *zincous* affinity instead of positive electricity. Extensive diagrams illustrated his views; but the purport of his paper was to shew that an advantage would be gained by change of terms, and that the condition of the terminal affinities would convey more readily the states of the elementary bodies. The change in the nomenclature proposed was as follows:—

	Synonymes.
Zincous	Positive.
Chlorous	Negative.
Zincoid	Positive pole. Anode, zincode.
Chloroid	Negative pole. Cathode, platinode.

The term zincoid, Prof. Graham observed, means what possesses the properties of zinc, quasi zinc; and chloroid, what possesses the properties of chlorine, quasi cholorine. Zinc was the head of its class; and of all salified bodies, chlorine was the head. They were types of their families. The same views were applicable to electrolytes, the elements of which he also wished to be called zincous and chlorous. Thus the concluded induction is an assumption, and we get rid of positive and negative electricity.

Mr. Grove objected to the terms zincous and chlorous, as too specific for the predicaments. They were not, moreover, the extremes of their class: for instance, in chloric acid, oxygen must, according to Prof. Graham's views, be stated to be chlorous to chlorine; and at the other extreme, potassium and the earthy radicals more zincous than zinc; but supposing the terms were chosen from the extremes, *non constat* but that substances of a greater extent of difference might be discovered, and thus a continual change of terms would be necessary. On the other hand, the terms positive and negative were essentially generic, and applicable to any change which could be at present foreseen.

SECTION C.—*Geology.*

1. Mr. Williams, 'On the Rocks of Devon and Cornwall.'
2. Mr. Austen, 'On the Fossils in the Limestone Slates of South Devon.'

Mr. Lyell's paper having, as we noted in our last, opened a new and interesting field for geological discussion, the Section Room was crowded as soon as the doors were opened; and, for several hours, many disappointed visitors were obliged to seek their instruction at other places, in consequence of finding this shut against all further entrance.

Dr. Buckland proceeded to make his promised statement. He remarked that the phenomena brought before them by Mr. Lyell were of very general occurrence. The pits in chalk, filled up in the manner he had so ably pointed out, had long been observed by French geologists, who had given them the appropriate name of natural wells—*puits naturels*. But to the present moment they had never been subjected to a systematic examination of the detritus they contained, their sand, gravel, and other deposits. They had only been noticed in a desultory manner. On reviewing what he had himself seen, and what had been advanced by Mr. Lyell, he differed from him as to the cause whence the acid vapours, or acid waters, were derived: what he might call the corrosive origin of these pipes or natural wells. His observations had been made upon those immense chalk-pits and excavations which occurred near Greenwich and Gravesend, where many acres were contained in a vast single field. With regard to the clay lining of the fissures, it might, like the work of bricklayers in chimneys, be called their *pargetting*. In his opinion, the gravel had been deposited at a period when the whole formation was under the salt water; and the clay, after the chalk had become dry land. The caves of Lunel, near Montpelier, in the south of France, offered analogous appearances. But the action of carbonic acid vapours, it should be held in mind, were not peculiar to chalk. In Auvergne, he had been taken to a well in the formation of granite, into which they threw cocks and hens to gratify the curiosity of visitors; and these animals were quickly destroyed in the same way as at the *Grotto del Cane*, near Naples. In Nassau, the same phenomena occurred; and it was upon the numerous acid springs in the vicinity of the Eifel that Baron Von Buch had founded his theory, that their impregnation and action were derived from the igneous rocks among which they rose. The Seidlitz and other acid waters, which came up from the earth spark-

ling like champagne, were thus accounted for by the Baron; who held that, though throwing off much of that with which they were charged, there still remained enough of acid to produce effects far more extensive than those under their consideration. A thousand square miles of rock of volcanic origin were percolated in this way. The phenomena of caves were also analogous, and were ultimately due to acid vapours or waters. They were lateral expansions, caused by the same action, after the chalk had been raised from the sea. In the caverns at Kirkdale, for example, the nodules of chert stuck out of the walls in thousands of projections, whilst the substance in which they had been embedded was corroded away. These nodules often had echini upon them, marking the age of these formations. Pursuing his subject, the learned professor then referred to some drawings which he had mentioned yesterday. They represented some extraordinary scenery near Syracuse, upon which he bestowed a high panegyric, and promised that they would well repay the trouble of a visit from any who now heard him, should it ever happen to them to be in that country. The extraordinary caves in this spot, not far from Hybla, so famed for its honey in classic lore, were the habitations of the native troglodytes long before the Greeks established themselves in Sicily. These were, no doubt, enlarged by their inhabitants, but there was one of considerable magnitude in the upper part of the cliff, hardly accessible to human foot, which had evidently been formed by the corrosion of an acid. Above Tours the same easily constructed abodes were found; and at Matlock, in our own country, these cheap and ready habitations were the residence of many of the poor. The rev. doctor further digressed to speak of the permanency of Trajan's Pillar, and of the famous Ear of Dionysius, and a ruined temple near these caves, which he ascribed to their being cut out of solid blocks of marble, without joints or cavities to expose them to the injuries of the atmosphere. Returning to his subject, he held that the corrosion in question had not been performed by running water, either from the surface or from below; but by water derived from currents under the sea. [This proposition was afterwards disputed, and no very satisfactory answer given.] The Doctor came next to treat of the action of rains on superficial rocks, of which he exhibited drawings by Mr. *Thomas Webster*, that most able artist and geologist.* Having made these cursory remarks, he would now address himself to the paper upon the Greenwich chalk he had spoken of; for he was sorry to inform them he had not come to that yet (*a laugh*). Here, where such prodigious masses of chalk and lime had been removed, similar perpendicular pipes were numerous; and there never was an instance of horizontal gravel. In a sand deposit cart-loads of bones were found, and horns of deer. The surface resembled that of the moon, so like that of volcanic countries, only in the former the holes were of prodigious extent. Some of them were fifty miles in diameter, and twice as deep as the adjacent elevations. Near Greenwich the hills were but as ant-hills, and the hollows between no larger than might admit a fellow of goodly rotundity to seat himself in one of them with his feet stuck up (*a laugh*). There, like Humpty-Dumpty, he might stretch each arm over the nearest hillocks, and feel the similar cavities on either side. Into these the deposit of carbonic acid from the rains would produce effects such as Mr. Lyell had described, and agreeably to the explanation of Mr. De la Beche. In the county of Antrim chalk flints were found below the basalt, and were stained red by the contact with volcanic rock, and a thin red stratum occurred between the chalk and trap. Between High Wycombe and Beaconsfield, as he had mentioned yesterday, the holes were filled with the bones of turtle and many other animals common to the tertiary gravel, with which they were here intermingled. This gravel was not superficial, but, as he thought, of the epoch of the Hertfordshire puddingstone and the formations of Blackheath. On the surface of the chalk they invariably found pebbles more or less rolled, as if the water had retired from them. The carbonic acid still continued to act: but, as we understood him, he was inclined to attribute the tubes in chalk to its action from above, whilst in volcanic regions, as in Auvergne, and during the tertiary period, he ascribed them to the intense action and great ascent of the carbonic acid which followed the plastic clay formation. For these reasons he could not agree to Mr. Lyell's hypothesis that the pipes in the Norfolk, or any chalk, were the result of the ascent of acid springs or vapours. He could not conceive where they were to begin; and he observed that the chalk immediately below these presumed vents was unchanged, and exactly like the surrounding material. This could not have been the case had the acid originated there. He would now be pachydermatous enough to venture his own theory; though he confessed their infinite obligation to Mr. Lyell for propounding his views on this subject. The lady of their respected secretary, Mr. Murchison, had in her collection a dish of curious fish, but they were not bigger than minnows; they were like the white bait so agreeable to eat at Greenwich, where his chalk pits were situated (*a laugh*). They did not reach the size of those Irish sprats which his friend (Mr. Williams) had obtained from the formations at Antrim. How, he would ask, came these fish to die? It was obvious from their remains that they had been killed instantly, some of them immediately after their own dinners, and been buried to the present age. On Mount Lebanon they were found, and on the Hartz Mountains. How came they to die? Some might have been destroyed by bitumen. When the island of Sabrina was recently thrown up from the sea, thousands and tens of thousands of fishes were cast on the shores, scalded to death,—killed either by heated water or by the disengaged carbonic acid. To ascertain this point, he had tried experiments with Dr. Daubeny; the fish were put into a vessel and the acid introduced. For a very short time they seemed not at all affected by it, but all in from one to five minutes perished: not one lived beyond five minutes. They darted round the tub with a rapid motion, and died. The fossil remains of fish in volcanic districts presented exactly similar phenomena: it was certain that they had died suddenly. Now the bottom of the sea would for centuries be impregnated with this acid, and it would exactly produce all these effects. There were, he acknowledged, some difficulties in the way of this explanation; and noticed, in illustration, the state of the strata between Weymouth and Flamborough Head. In conclusion, he again expressed how deeply they were indebted to Mr. Lyell for pursuing this inquiry connected with superficial geology, and an accurate examination of the surfaces of rocks. It was only within four or five years that it had been taken up, and already they had made striking advances in eliciting from it information of great value. Dr. B. then illustrated this opinion by adverting to his favourite topic, the impressions left on the sands. These were registers of the phenomena. From them could be told where the rain fell, whither the footsteps were directed, if they were small rains or thunder storms, which way the wind blew, the animals walked, and the water ran. All this was unfolded by a small piece of Shrewsbury sandstone! From the fossil fishes they could acquire like knowledge—see what they had eaten for dinner, and how much digested: altogether, it was only by such means they could ascertain the progress of animal creation and the changes in the formation of the earth.

Mr. Lyell rose to commnnicate some new facts connected with the subject, which he had only that morning received from a young friend, Mr. Wickham, at Norwich. This gentleman stated, that at Mr. Lyell's request he had explored a chalk pit at Higham, where, instead of being quite or nearly perpendicular, as at Eton, he had found the gravelly pipes tortuous, slanting and winding (a drawing of a transverse section shewed this). Sometimes a covering of marl was deposited over their upper surface, which must have taken place after the gravel had sunk into the cavities. There were also cavities in the middle of the chalk, and without any communication with the surface. On the surface a chalk rubbish, of a posterior date, appeared. In one tube, two masses of indurated white sand were discovered. The Norwich crag at Thorpe, where so many varieties of fresh water and marine shells were collected, sixty per cent belonging to British living shells and forty per cent to extinct species, lay above the chalk. The upper stratum consisted of a ferruginous sand of a brown colour and containing organic remains. Below was a stratum of ten feet of sand, and between it and the crag was a thin lining of slate-coloured clay. Twenty feet of crag succeeded, and below was the chalk, excavated to the depth of thirty-five feet, and within four feet of the water. Mr. Lyell then defended his theory of the ascent of acid vapours from below, which he thought the most probable as regarded the larger pipes; but he was inclined to adopt Mr. De la Beche's opinion respecting the smaller ones, that they were formed by the descent of rain charged with carbonic acid from above.* As for the promise of their learned president, Dr. Buckland, he had given them no theory at all.

Dr. Buckland joined in the laugh at this, and said that the antiquaries' notions of Druids' stones were all mistaken, and stolen from these irregular surface wells of the geologists.

Mr. Strickland mentioned several gravel tubes near Henley, which had been made in the chalk within a very few years.

Here the discussion closed.

Mr. De la Beche exhibited an admirable specimen of the 'Ordnance Geological Map of Devon and Cornwall.'

1. Mr. D. Williams read a paper 'On the Rocks of these Counties,' in which he opposed the opinions of Mr. Weaver in the "Philosophical Magazine." From a map and section which he exhibited, shewing the position of strata in various parts, he concluded that all Cornwall and South Devon were of geological conformity, and probably the produce of long-continued volcanic activity. The immense granite dyke from Oakhampton to the Scilly Islands might

* These were certainly very characteristic and beautiful, and proved how well Mr. Webster was entitled to the compliment paid to him.—*Ed. L. G.*

* Two theories for the same phenomena, only differing in size, does not seem to us to be very philosophical.—*Ed. L. G.*

be of a volcanic origin, and of the same period as the parallel ranges of the Grampians and the north of Ireland. The entire structure of Exmoor he believed to have existed long before the depositions of the Cornish slate.

2. A paper was next read from Mr. Austen, 'On the Fossils in the Limestone Slates of South Devon,' shewing the great analogy between the remains of the Eifel on the Rhine and of Devon, regarded of the same age. A long list of them was read, and included Radiaria, Mollusca, and Crustacea. The south of Ireland and Lower Normandy possess similar strata. The paper offered some very sensible objections to the practice of giving local and personal names to objects of general science.

Mr. Greenough exhibited the new edition of his Map of England; and Mr. De la Beche complimented Mr. Williams on his industry in exploring Devonshire. He estimated the thickness of the slate series of North Devon at 30,000 feet, containing fossils slightly resembling the Silurian form. The fossils from the limestone of South Devon are all different from those of North Devon. He expressed his opinion that the limestones of South Devon are younger than the slates.

SECTION D.—*Zoology and Botany.*

1. Mr. Goodsir, 'On the Follicular Stage of Dentition in the Ruminants, and other Orders of Mammalia.'
2. Mr. Wilde, 'On the Preparation of Fish.'
3. Mr. Forbes and Mr. Goodsir, 'On the Ciliagrada of the British Seas.'
4. Mr. Wilde, 'On some New Entozoa.'
5. Mr. Webb Hall, 'On the Growth of Wheat.'

Mr. Goodsir read a paper 'On the Follicular Stage of Dentition in Ruminants, and other Orders of Mammalia.' Referring to his paper on the same subject, at Newcastle, he had since ascertained that all the permanent teeth, excepting the first molar, which does not succeed a milk tooth, are developed from the internal cavities, and the depending folds of the sacs of composite teeth are formed by the lips of the follicles advancing inwards after the latter closes. Mr. Goodsir further described the earliest indications of the teeth in the embryo state, and generally the gradual formation of teeth. In conclusion, he stated the results he had arrived at to be that, 1. In all the mammalia he had examined, the follicular stage of dentition was observed. 2. The pulps and sacs of all the permanent teeth of the cow and sheep, with the exception of the fourth molar, were formed from the minor surfaces of cavities of reserve. 3. The depending folds of the sacs of composite teeth were formed by the folding in of the edges of the follicle towards the base of the contained pulp, the granular body assisting in the formation of these folds. 4. The cow and sheep (and probably all the other ruminants) possessed the germs of canines and superior incisives, at an early period of their embryonic existence.

Mr. Wilde's paper 'On the Preparation of Fish' followed. His method of preserving specimens appeared to accomplish that object in the most natural manner. A conversation ensued, in which it was discussed, whether arsenical soap was eligible for this purpose? Mr. Strickland holding that it was not; and Mr. Burchell, the African traveller, stating that it had been perfectly so with him, and lasted for five and twenty years.

Mr. R. Patterson brought forward a specimen of Ciliagrada, taken on the Irish coast, and which he had named Bolina Hibernica. It led to a question on the luminosity of this species of fish. Professor Jones stated that the property was not limited to this species, as several possessed it; nor to life, as the dead also were luminous. Mr. E. Forbes recommended the placing of the animals in a watch-glass, as the best mode for examining them. A subsequent paper, 'On the Ciliagrada in our Seas,' by Mr. Forbes and Mr. Goodsir (illustrated by drawings of Alcynöe, Cydippe, and Beroe), led to a conversation respecting the fine tentacula, and other curiously formed organs of these Medusæ, hitherto so unsatisfactorily examined.*

It concluded with one part of the Section speaking of their eyes at the ends of certain filaments, and another portion denying that they had eyes at all.

Mr. Wilde read a paper 'On some New Entozoa.'

Mr. Webb Hall's paper 'On the Growth of Wheat' (see our last) closed the day's work.

SECTION E.—*Medical Science.*

Mr. Middlemore, 'On Artificial Pupil.'
Dr. R. D. Thomson, 'On Alkaline Dyspepsia' (given in our last *Gazette*).
Dr. Macartney, F.R.S, 'On the Modes of Suppressing Hæmorrhage.'
Dr. Folville, 'On the Brain.'

SECTION F.—*Statistics.*

Mr. Hallam, P., in the chair, Sir C. Lemon, V.P., having presided on the preceding day. Report deferred.

SECTION G.—*Mechanical Science.*

Mr. Beart read a paper 'On a New Mode of Filtering Liquids by Means of a Perforated Piston.' By the usual mode of filtering, hydrostatic pressure had hitherto, with few exceptions, been used; but the tediousness of this process, especially as applied to decoctions, infusions of coffee, &c., and the waste from evaporation, loss of time, and heat, rendered some other mode desirable. The method he proposed obviated these inconveniences, namely, the use of a perforated packed piston, in a cylinder, or other shaped vessel, and making the piston itself the filtering medium.

Dr. Lardner, at great length, detailed some important 'Observations on the Resistance of Railway Trains,' containing the result of inquiries undertaken by himself and Mr. H. Earle, in conjunction with Mr. Wood, at the instance of the British Association. Before their inquiries were instituted, it was assumed by inquirers that the resistance of railway trains had no dependence on velocity. Their experiments were, therefore, directed to the solution of this question; and, after numerous trials on railways, they arrived at the conclusion that the atmosphere played a more important part in the question than was imagined, and that its resistance produced a material effect on the velocity of the train. He stated that the whole of his details would be published, when those who felt an interest in the question might have an opportunity of examining the results they had arrived at for themselves. They had conducted their experiments on the Grand Junction, and Liverpool and Manchester Railways; and he took that opportunity of acknowledging his thanks, as he was sure the Association, as a body, would do, to the directors of those companies, for the facilities which they had afforded them in their inquiries.

The evening closed with a well-attended conversazione in the magnificent town-hall; where abundant refreshments were provided, and the splendid organ pealed forth its notes to the great delight of the company.

Following our own example last week, we now proceed to a miscellaneous insertion of Reports selected from succeeding days; and which, though irregular in the order of time, will materially decrease our labour as we overtake the Sectional proceedings.

Prof. Schönbein then read to the Section a paper 'On the Theory of the Electro-chemical Protection of Metals from Corrosion.' After glancing at the theories of electro-chemistry proposed by Berzelius and Sir H. Davy, the Professor adduced a numerous series of experiments, bearing upon the fact of the apparent necessary existence of a current to prevent the corrosion of the lesser oxydisable metal; for when pieces of copper and zinc were placed in metallic connexion, and immersed in vessels of brine not communicating with each other, the copper was invariably more or less attacked, unless a portion of *both* metals was immersed in each vessel: when, however, the copper and zinc legs of a compound arc were immersed in communicating vessels, the zinc was attacked and the copper perfectly protected from corrosion. This, and other facts bearing upon it, being proved, the Professor passed on to a consideration of the possibility of any developement of polar properties influencing the behaviour of metals towards corroding liquids: this idea he experimentally proved to be untenable, as he had in vain sought for any case in which the chemical affinities of bodies were materially affected by their elastic conditions. Referring particularly to the immediate object of his paper, Professor Schönbein stated that he did not believe the protection of copper from the action of sea-water, by means of zinc or iron, depended upon the existence of a continuous current of feeble intensity, continually circulating through the metals, but rather on the induction of a kind of passive state in the copper, in the following manner:—A piece of copper being placed in metallic communication with a piece of zinc, and immersed in sea-water, slowly developes a current, which, although of feeble intensity, is, nevertheless, of sufficient electrolytic effect to decompose a portion of water, resolving it into its constituent elements; the oxygen combines with the zinc; the hydrogen being evolved, and becoming diffused over the surface of the copper, to which it adheres, this gaseous layer affords a mechanical protection from the corroding influence of the sea-water. The Professor drew some analogy between this state and the extraordinary passive state of iron, under certain conditions, towards nitric acid, previously described by him. In this case, Professor Schönbein thought it not improbable that peroxide of hydrogen became developed, and formed the protecting agent to the iron wire. After alluding

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* Eschscholtz's work on those of the Pacific Ocean is, perhaps, the best on the subject: the British species of ciliagrada ascertained, and some of them well known and not much liked in their jellies by our sea-bathers, are thus enumerated:—

Genus *Cydippe*—Filamentary appendages.
Genus *Alcynöe*—Tentacula round mouth.
Genus *Beroe*—No tentacula or appendages.

1. *Cydippe pileus* (Linnæus). — Rows of cilia, 19 or 20, on the summits of the lobes — filamentary appendages white. St. Andrew's. Mouth of the Thames (Dr. Grant).
2. *Cydippe Flemingii* (Forbes). — (*an*) *Beroe ovatus*, Fleming?) — Rows of cilia 36, on the summits of the lobes —filamentary appendages white. St. Andrew's.
3. *Cydippe lagena* (Forbes). — Rows of cilia about 25, placed in the furrows of the lobes—filaments white. Coast of Ireland.
4. *Cydippe pomiformis* (Patterson). — Rows of cilia about 20—filaments rufous. Coast of Ireland and mouth of Forth.
5. *Alcynöe rotunda* (Forbes and Goodsir). — Ovate, rounded, crystalline — tentacula rounded at their extremities — natatory lobes forming half the animal. Kirkwall Bay, Orkney.
6. *Alcynöe Smithii* (Forbes). — Elongato-pyriform, subcompressed, crystalline — natatory lobes not more than a third of the whole length.—tentacula acute.
7. *Beroe cucumis* (Otho Fabricius).—No spots on external surface, internal dotted with red points—ciliferous ridges red. Isle of May at the mouth of Forth.
8. *Beroe fulgens* (Macartney).

to some other points of great importance, as connected with the generally received views of philosophers on the electro-chemical relations of many substances, the Professor concluded his paper amidst considerable applause.

Mr. Grove said, that of the various theories of electricity, Professor Schönbein had only alluded to that of Sir H. Davy, as modified by Berzelius; and that he was unable to discover in what essential particular his (Professor Schönbein's) views differed from those of purely chemical theorists. With regard to metallic protection, Mr. Grove stated that his view had always been (and he never considered it as in the least degree original), that this protection was occasioned by the oxygen being abstracted by the affinity for it of the positive metal, and leaving hydrogen, or some electro-positive element, in contact with the negative metal. That this is the general view entertained by chemical theorists, he firmly believed; and that it is the view of Professor Daniell, he proved by a quotation from one of his papers. In speaking expressly of metallic protection, Professor Daniell says, "I was at a loss to conceive how the hydrogen, which must be the equivalent of the oxygen united with the positive metal, could be spread over so disproportionate a space." These words are too explicit to admit of any misconception. With regard to the possibility of feeble currents being conducted by electrolytes without decomposition, Dr. Faraday felt himself obliged to admit it; as the results of experiment shewed him, that evidence of decomposition could be obtained in no certain cases where there was evidence of conduction. He seems, however, to consider it rather as an exception to his law of definite electrolysis; and he by no means extends it to the generating pair, as he regards, or did regard, the oxidation of the zinc to be the sole source of voltaic action. The anomaly has, however, been removed by the detection of the phenomena of polarized electrodes, and by the satisfactory explanation of M. Becquerel.

After some remarks from other members present,

Dr. Golding Bird expressed his entire belief in the views of Professor Schönbein, and adverted particularly to that part which had been alluded to as most objectionable, viz. the possibility of minute traces of gases adhering to metallic surfaces, and thus mechanically protecting them from corrosion. Dr. B. stated that philosophers were in possession of so many facts supporting this view, that its correctness could scarcely be doubted; thus the secondary currents, developed by platinum plates that had been used on the electrodes of a voltaic battery, owed their influence entirely to the adhesion of infinitesimally minute portions of foreign matter to their surface; and this foreign matter, in the case of pure water, could scarcely be anything else than the gaseous elements of water. So far were the relations of a metal affected by this adhesion of gaseous matter to its surface, that it had been shewn that a plate of platinum, immersed in oxygen gas for a few seconds, was capable of developing an energetic current when immersed in acidulated water with a platinum plate that had not been so exposed. Dr. Bird referred to some researches, published by himself in the 'Philosophical Magazine,' in which this state of surface even modified the effects of platinum plates, when subsequently employed as the negative elements of a simple voltaic circle; so that when two plates that had been previously employed as the electrodes of a battery were voltaically connected with zinc, and immersed in the same vessel of dilute acid, double the quantity of hydrogen would be evolved from one of the platinum plates, as compared to that evolved from the other. Collating these phenomena with those described by Dr. Faraday, in which the influence of platinum in aiding gaseous combination was affected by the state of the surface of the metal, Dr. Bird considered that an induction might be drawn highly favourable to the views of Professor Schönbein.

Mr. Grove explained, that he had not expressed any difference of opinion from Professor Schönbein, but had endeavoured to shew that the same views had been entertained by other electricians.

'On the Elastic Force and Density of Steam.' By Andrew Ure, M.D., F.R.S.—The specific gravity of vapours, of different substances, is a subject of modern investigation, for which we are primarily indebted to M. Gay Lussac. The experimental process devised by this ingenious and accurate philosopher, consists in measuring the volume of vapour, furnished by a given weight of liquid. Having weighed a globule of glass, like the bulb of a large thermometer, he then filled it, by heating the bulb, and plunging the point of its capillary tube in the liquid to be vaporised, repeating the heating and immersion till it was entirely full. In this state it was slightly heated, to expel a drop of liquid from the point, which was then hermetically sealed by the flame of a blow-pipe. The bulb was next introduced into a graduated bell-jar, about a foot long, and two inches in diameter, filled with, and inverted in, mercury, contained in a cast-iron trough. That jar was enclosed within a glass cylinder, open at top and bottom, the space between the two being filled with water or oil, whose hydrostatic pressure was supported by the subjacent column of mercury. The trough or pan, with these cylinders, was placed over a little furnace, whereby it was progressively raised to any desired degree of temperature. Eventually the liquid became sufficiently hot to generate vapour, of such tension as to burst the thin glass bulb. In the case of water, he continued to heat the apparatus till the water contained between the two cylinders entered into steady ebullition; at which instant he measured the space occupied by the steam, noting the height of the mercury in the bell above the level of the bath; by deducting which height from that of the barometer placed in the same apartment, he found the pressure of the internal vapour. He afterwards reduced by calculation the length of the volume of mercury, to what it would be at the temperature of melting ice; and made the small correction due to the volume of liquid between the cylinders.

In this research we must take care that the whole of the liquid of the bulb be reduced into vapour, otherwise we shall fall into great errors. This circumstance would occur, were more liquid introduced into the bulb, than would fill the whole space in the bell-jar at the given temperature.

M. Gay Lussac, in calculating the results, referred the volume of a gramme of water (15·444 grains) to a gramme of dry air, at $0{\cdot}76^{m}$ pressure (29·92196 inches English), now since 1 litre (=100 grammes of atmospherical air) weighs 1·299 grammes, the volume of 1 gramme ought to be $\frac{1 \text{ litre}}{1{\cdot}299}$. Let V be the volume of vapour furnished by a weight, 10, of the given liquid, the volume of 1 gramme will be $\frac{v}{u}$; let h be the height of the column of mercury standing within the bell above the level in the bath; H, the height of the barometer at the time of the experiment; H h will be the pressure sustained by the vapour, it being the temperature of the whole apparatus. To make the comparison of volumes upon a like quantity of matter, they should be reduced by calculation to the same temperature and pressure. The weight of a litre of dry air being taken at 0° (C 32° Fahrenheit), and at the pressure $0^{m}{\cdot}76$, all the result should be reduced to the same point. At first the volume is too small, because each division, in virtue of its expansion, is enlarged in the ratio of 1 to $1 \times kt$; k being the cubic of the matter of the bell-jar. The volume of the vapour is dilated in the ratio of 1 to $1 \times 0\ 100{\cdot}375 \times t$, as the volumes of gases and vapours are inversely as the pressures upon them, the corrected volume will be

$$V\ (1 \times kt)\ (H\ h)$$
$$P\ (1 + 0{\cdot}00375 \times t\ 0{\cdot}76).$$

The following calculation of the density of steam will illustrate the preceding proposition and formula:—

Weight of the glass bulb full of water	1·391 gramme.
Weight of the glass bulb empty	0·791 "
Weight of the water alone	0·600 "

This quantity of water filled at the temperature of 100 C, 220 divisions of the bell-jar; each division contained 0·005 of a litre. The column of mercury raised in the jar above its level in the bath was 0·052 of a metre; the internal barometers stood at 0·756 metre. The coefficient of the cubic dilatation of the glass is for each degree centigrade = $\frac{1}{38\frac{1}{2}\frac{1}{60}}$. Introducing all these data into the formula, it was found that the density of the steam is $\frac{1}{1\frac{8}{9}}$ of that of air, or 0·625, air being 1·000. In the same way, M. Gay Lussac determined the densities of the vapours of ether, alcohol, sulphuret of carbon, and oil of turpentine, as follows:—

Tables of Densities.

	Weight of a litre at 0° C. and 6·76 of pressure.
Air	1·000
Vapour of water	0·625
Alcohol	1·613
Sulphuric ether	2·586
Sulphuret of carbon	2·645
Oil of turpentine	5·013

That the densities of vapours vary proportionally with the pressures has also been experimentally determined; or, in other words, vapours when reduced by calculation to the same standard temperature, are proportional to the elastic forces. Upon this principle, the column entitled specific gravity of steam, in the following table, has been constructed; and the columns entitled number of cubic feet of steam, from one pound of water, has been computed by me from the preceding column, and the known weight of a cubic foot of water. One volume of water at 32° produces 1694 volumes of steam, at the temperature of 212° Fahr., and a pressure of 29·912 inches of mercury. The number 0·000589, given as the specific gravity of such steam, is obtained by dividing 1000 by 1698, on the supposition that one volume of water produces 1698 volumes of ordinary steam.

SECTION B.—*Chemistry and Mineralogy.*

'Upon the true Constitution of Chlorochorine Acid; upon a new Compound called Iodosulphuric Acid; and on the Chromates of the Magnesian Family,' by Lyon Playfair, Esq.—The subject of this paper was to describe a new acid, and to point out methods of procuring others of a similar class, in the investigation of which Mr. Playfair is at present engaged. The compound which he has called Iodosulphuric Acid, may be procured by mixing two atomic proportions of iodine with one equivalent of sulphite of lead, and subjecting the

mixture to distillation; or by a more easy method, by sending a stream of pure sulphurous acid through a solution of iodine in pyroxilic spirit to complete saturation. It may be procured from this by distillation, drying over sulphuric acid, &c. It has a powerful acid taste, and acts violently on the cuticle, being analogous in composition with the chlorosulphuric acid of Regnault. Mr. Playfair tried several experiments to isolate hyposulphurous acid in a similar manner; but although not completely successful, he procured sufficient indications to encourage him to proceed. He then gave an account of the characteristic properties of the chromates of the magnesian oxides. The circumstances which induced him to enter into the investigation, was to discover the causes of the great dissimilarity, both in chemical and physical characters, of the chromates to their corresponding sulphates. Most of the magnesian chromates are described as insoluble, and those which are not are extremely little known; but by boiling a sulphate of the oxide required with chromate of barytes, soluble chromates may be obtained, exactly corresponding and isomorphous with the sulphates. They in general affect the same number of atoms of water. The insoluble chromates are of a very interesting constitution, but their analytical developement is a work of extreme intricacy, on account of several existing of each oxide.

The Union Dinner, in the Town-hall, on Thursday, was a brilliant affair; the Marquess of Northampton presiding, and being indeed, as he was at Bristol (when, also, unexpectedly called upon to perform the arduous duties of president, in the absence of Lord Lansdowne, as now through the indisposition of Mr. V. Harcourt), the soul of the Meeting, both in its working business, and its relaxations from toil. At present, we have not room for a detailed notice. Above eight hundred members enjoyed the treat.

On Friday the excursions were sadly marred, by its being even as wet a day as that which damped the tournament at Eglinton. In spite, however, of wind and weather, we embarked with the Division A. (see *Lit. Gaz.*, Note, p. 547)—about eighty in number—and arrived in undue time, through slush and mud, at Horsely Iron Works, where the smelting of that stubborn ore is carried on in an admirable manner. Thence to the works of Messrs. Bradley and Co., through a drenching rain, which was compensated by the sight of the metal brought from the smelting furnaces, and now rolled about in burning masses with the ductility of dough or confection sugar. The fiery lumps hurled towards the grooved cylinders were soon formed in bars or sheets, clipped off like threads of flax, and moulded into any wished-for shape; while the longer rods and wires wreathed about as if they were living serpents of fire. It was a striking spectacle. Dried in these Vulcanic regions, we were again wet to the skin in our walk to join Division C. at the Limestone Caverns [what became of Division B., if there were such, we never heard], and fortunately reached them in time to enjoy a scene which imagination could hardly conceive. These immense caverns were illuminated from end to end; and the lights reflected from the waters below seemed innumerable as the starry hosts. In lateral and highly arched caves, blue lights were burnt; and the whole was truly a magic illusion. The sides were lined with people, and in boats below were the members (some 300), headed by Mr. Murchison, who delivered a most animated and scientific lecture on the natural wonders by which they were surrounded. Volleys of arms were discharged with startling effect, and the shouts of the multitude gave an almost superhuman sublimity to the scene, as the clouds from the artillery rolled with their thunders along the vaulted roofs.

At the mouth of the caverns, Dr. Buckland pronounced a splendid oration, which we regret we did not hear, the sudden departure of Prof. Phillips, called away to attend the death-bed of his uncle, Dr. Smith, having left the divisions without programmes, so necessary for their direction. The incessant rain did not prevent nearly the whole party from attending Mr. Murchison to the Wren's Nest, on which picturesque spot, during a blink of fine weather, he explained the surrounding geological formations—the lime and coal, sources of the wealth of these districts, and themselves so rich in fossil remains. The lunch at Dudley was a merry meeting after all the physical endurance and mental enjoyments of the day; but as one of our companions, who unites much of wit and humour with no small share of scientific attainments, favoured us with a description of the whole in rhyme, we gladly avail ourselves of his sportive muse to lighten the solidity of these Reports.

The Dudley Expedition; an Association Medley.

Tune.—"Going to Putney by Water."

Come, listen, all as members be,
Whether of Section A, B, C,
D, or else of F, E, G,
As go to Dudley by water!
As how from Brummagen we set,
Upon one Friday very wet,
To gather stones, and fossils get,
All at Dudley by water!
Skipping, dripping all the way,
Lots of swim and nothing to pay,
Every one with summut to say,
Going to Dudley by water!

Each philosopher so wise
Then set out with staring eyes,
The little fishes to surprise,
As go to Dudley by water!
Not a soul behind did lag,
But with hammer and with bag,
Smashed at dyke, slip, fault, and crag,
When they went to Dudley by water!
Skipping, &c.

Under ground we then did go,
Candles round us in a row,
Sich a flare-up and a show,
All at Dudley by water!
Dr. Buckland then arose,
And the people there he shows
What rum beasts in stone there grows
In the caves at Dudley water!
Dripping, &c.

Then at dinner sich a rush,
Sich a scramble, cram, and crush,
Lots of grub and little lush,
All at Dudley by water!
And when we came back to town,
War'n't it funny that we found
All this fun for half-a-crown,
When we went to Dudley by water?
Skipping, &c.*

Postscript.—On Saturday the General Committee met (to the number of about thirty), at one o'clock; the Marquess of Northampton in the chair. The report of Thursday's meeting was read, and confirmed.—Mr. John Taylor laid the following state of the finances before them, made up to the 15th of August, and before the Birmingham meeting:—

Rec

Balance in hand	£670	0	7
Compositions from Life Members	641	0	0
Subscriptions for 1838	1944	0	0
Do. 1839	37	0	0
	£3292	0	7

Brought over,	£3292	0	7
Arrears	37	1	0
Dividend on Stock	165	0	0
Sale of Reports	412	9	6
	£3906	11	1

Expenditure.

Expenses at Newcastle				500	0	0
To Local Treasurers				156	18	5
Salaries, &c.				250	0	0
Grants to Committee for Scientific Purposes:						
For Reduction of Stars in Histoire Céleste	£331	18	6			
Do. Lacaille	11	0	0			
R. Ast. Soc. of Cat. Stars 1837	6	16	6			
Land and Sea Level 1838	52	1	4			
Do. 1837	222	0	0			
Tide Discussions at Bristol	35	18	6			
Mechanism of Waves 1837	94	2	0			
Do. 1838	50	0	0			
Meteorological Observations, Plymouth	55	0	0			
Do. do. hourly, Scotland	49	7	8			
Completing Anemometer	8	10	0			
Meteorology and Subterran. Temp. 1837, Thermometer	21	11	0			
Atmospheric Air	16	1	0			
Action of Sea Water on Iron	40	0	0			
Action of Hot Water on Organic Bodies	3	0	0			
Bristol Fossil Ichthyology	110	0	0			
Fossil Reptiles	118	2	9			
Mining Statistics	50	0	0			
Duty of Cornish Steam-engines	50	0	0			
Marine Steam-engines	100	0	0			
Experiments on Vitrification	9	4	7			
Do. on Strength of Iron	100	0	0			
Animal Secretions 1837	10	10	0			
Gases on Solar Spectrum, Action of	22	0	0			
Railway Constants, 1837,	£8	7	2			
Do. 1838,	20	0	0			
	28	7	2			
				1595	11	0
Printing Reports				801	14	0
Do. Lists of Members				77	12	0
Advertising, &c.				38	14	6
Sundries				25	7	10
Balance in hand, viz.—						
At the Banker's	£352	15	0			
At the Treasurer's	107	18	4	406	13	4
	£3906	11	1			

The estimate of their property was, in 3 per cents., at 91*l.*, 5002*l.*; stock of "Transactions," &c.: in all, amounting to 6048*l.* 0*s.* 4*d.*

At Birmingham, the receipts were from 1438 members—

Enrolled	£1457
For books on the new plan proposed, 4 subscribers	20
"Transactions" sold	75
Total	1552

The disbursements, of course, not yet ascertained; and the voluntary contributions to what is called the Local Fund, apparently small in amount.

Dr. Peacock (the Dean of Ely) read the Report of the Committee appointed at Newcastle, to apply to government on the subject of the Antarctic Expedition, to be intrusted to that gallant sailor and eminent man of science, Captain James Ross. It detailed the negotiations and preliminary arrangements; touched on the importance of the magnetic observatories about to be established in connexion with it at St. Helena, the Cape, Canada, Van Dieman's Land, and New Zealand; and complimented ministers, and especially Lord Minto, at the head of the Admiralty, for having adopted the whole plan recommended in the most ample and liberal manner. The Erebus and Terror were now, or would speedily be, on their way to commence this the most important scientific expedition, perhaps, ever undertaken in the world. It was almost certain that other nations would follow the example, and, by establishing similar observatories, enable them to compare the phenomena over the face of the earth. The East India Directors had also come generously forward, and given orders for the erection of an observatory at Madras (held to be a preferable station to Ceylon, as originally in-

* A laughable incident attended this aquatic expedition. On passing one of the canal locks, boats have to leave a manifest so that the proper dues may be charged on them. One of ours, as returned by the surveying officer, ran thus—"Draught, 13 inches; weight, 3½ tons; cargo, philosophers!"

tended); and would extend them, where requisite, over the Indian territories. Dr. Peacock also spoke highly of the perfection of the meteorological and other instruments furnished, in duplicate, for the occasion; and observed that, though the grant of 400*l.* was continued by the Association as a contingent to the expenses, it was most unlikely that any part of it would ever be called. Only it was desirable to have it ready for any immediate demand, without waiting for the delay of official forms.

The next report was respecting a Museum for the Deposit of Mining Records, a very essential and useful recommendation. To this the Chancellor of the Exchequer had agreed, and government had consented to allow a salary to a keeper. Arrangements were making to carry into effect.

The Committee on publishing the Ordnance Map on a large scale—six inches to a mile—also gave in their report, from which it appeared to be in favourable odour, but not yet completely determined upon.

Dr. Lardner moved a vote of thanks to the railway directors, who had liberally aided the experiments on the resistance in railways, &c.—Carried.

Dr. Peacock then moved the new grants; but it will be seen that many of them were only renewals of former grants not taken up, or continuations of fractional portions where the whole sums had not been expended. The total amounts were, for

Section A	£1810	17	4
B	240	0	0
C	81	17	3
D	141	0	0
E	125	0	0
F	100	0	0
G	390	0	0
	£2888	14	7

The particulars as follows:—

A. For Reduction of Meteorological Observations (Sir J. Herschel) continued	£100	0	0
For Reduction of Stars, Cœlum Australe, Balance of 200*l.* undrawn	189	0	0
For Revision of Nomenclature of Stars, Northern Constellations, continued	50	0	0
For Histoire Céleste, balance of 500*l.* undrawn (13000 Stars had been reduced.)	328	1	6
For Extension of Royal Astronomical Society's Catalogue, balance of 500*l.*	343	3	4
For Magnetic and Meteor Instruments above referred to	400	0	0
For Hourly Meteorological Observations in Scotland, balance of 100*l.*	50	12	6
For Committee on Waves	30	0	0
For Committee on Subterraneous Temperature, to complete this branch of inquiry	20	0	0
For Tide Observations (Prof. Whewell)	50	0	0
For an Engraved Plate to facilitate Calculations in Observations	10	0	0
For the Translation of Foreign Scientific Memoirs (Major Sabine)*	100	0	0
For Anemometer (Prof. Whewell and Mr. Snow Harris)	10	0	0
For Mr. Osler's Anemometer	30	0	0
For Continuation of Hourly Observations at Plymouth	40	0	0
For procuring and fixing an Anemometer in Scotland	60	0	0
	£1810	17	4
B. For Analysis of Atmospheric Air (Mr. West) continued	24	0	0
For the Action of Sea-water on Cast and Wrought Iron (Mallet)	30	0	0
For Action of Boiling Water on Organic and Inorganic Bodies	70	0	0
For Experiments on the Gravity of Gases	40	0	0
For Experiments on Chemical and Electrical Phenomena, to follow on those of M. Shönbein, and reported at next Meeting	40	0	0
	£204	0	0

* This grant was recommended by Sections C and D, and it was particularly noticed how much the translation from the German of Gauss and Weber's works on magnetic association, the general theory of terrestrial magnetism, and on the uses of certain instruments, had contributed to the efficient preparations for our antarctic expedition (for them, see Parts V. and VI. of Messrs. R. and J. Taylor's Scientific Memoirs, a periodical of infinite value in science). We could have wished this grant and its consequent operations extended to three or five times as much.—*Ed. L. G.*

C. Only one grant—for Promoting the Knowledge of Fossil British Reptiles, balance of 200*l.* at Newcastle	£81	17	3
D. Experiments for the Preservation of Animal and Vegetable Substances (Prof. Henslow) continued	6	0	0
(By C and D) Drawings of Animals in Marine Zoology dredged up from the Waters	30	0	0
For engraving Skeleton Maps	60	0	0
For engraving Plants and Animals	20	0	0
For printing Questions for the Use of Travellers, respecting the Races of Men in uncivilised States (Dr. Pritchard)	5	0	0
	£141	0	0
E. For Experiments on the Sounds of the Heart	25	0	0
For Experiments on the Physiology of the Lungs and Bronchi	25	0	0
For Experiments on important Medico-acoustic Instruments (Dr. Yelloly)	25	0	0
For Experiments on Veins and Absorbents	25	0	0
For Experiments on the Action of Acrid Poisons	25	0	0
	£125	0	0
F. For Inquiries on Schools for the Working Classes	100	0	0
G. For Inquiry into the Duty performed by American Steam-boats	50	0	0
For Duty of Engines not in Cornwall	20	0	0
For Experiments on Hot and Cold Blasts	100	0	0
For Experiments on the Deflection of Beams after long use	20	0	0
For Experiments on the Forms of Vessels, continued	200	0	0
	£390	0	0

Other subjects were recommended without grants. In A, Mr. Henwood to continue his valuable Researches and Report on the Temperature of Mines in Cornwall. Mr. R. W. Fox, on Subterranean Temperature. The Committee at Plymouth, to reduce their Hourly Observations for the five preceding years. Professor Millar, Report on the State of Science,—on Radiant Heat,—on Electro-chemical and Magnetic Sounds,—on the Levels of Sea and Land.

That a Conchological Collection be formed at the British Museum, with models and casts.

The Committee for collecting and preserving Records of Mining Operations, to carry the the plan into effect. And,

The Council to be authorised to apply for Reports of Scientific Progress in every Department of Science.

This last resolution is calculated to produce very important fruits; and we may here give the names of the council to whom the charge is intrusted: viz. Dr. Arnott; F. Baily, Esq.; R. Brown, Esq.; Earl of Burlington; Dr. Daubeny; G. B. Greenough, Esq.; Professor G. Graham; J. E. Gray, Esq.; R. Hutton, Esq.; Sir C. Lemon; C. Lyell, Esq.; J. R. Lubbock, Esq.; Dr. Lardner; Professor Owen; Colonel Sykes; Professor Whewell; Professor Wheatstone; Captain Washington; Dr. R. Lee; Professor Powell; Professor Mosely; Professor Daniel; G. Rennie, Esq.; Dr. Hodgkin; Dr. Peacock.

With this administrative body to direct the business of the Association, we were somewhat in error last week in saying that the Committee of Recommendation were "the Executive." Their office is certainly important as regards the finances, as no grants can be moved except through them; but still the General Committee possesses the power of *veto*, should it ever be necessary to exercise it.

At three o'clock, the general closing meeting took place in the Town-hall; of which, however, all we can at present notice is, that a scientific meeting at Pisa, in the first week of October,—a geological meeting at Boulogne on Monday next, September 7th,—and a meeting of German naturalists at Piedmont, on the 18th of September, were announced, with cordial invitations to the English *savans* to visit them.

The customary votes of thanks to the townspeople, institutions, &c., were given by acclamation; but our bounds are far exceeded, and we must reserve any particulars for hereafter. We may add that the summary of papers read at the various Sections during the week, hitherto, and justly, deemed one of the most important features of the meeting, was, for the first time, omitted at the conclusion of the sittings. But time pressed, and this very useful act, as well as the returning of thanks by the parties complimented, were left out.

REVIEW OF NEW BOOKS.

Journal of a Residence in England, and of a Journey from and to Syria, of their Royal Highnesses Reeza Koolee Meerza, Najaf Koolee Meerza, and Taymoor Meerza, of Persia. To which are prefixed some Particulars respecting Modern Persia and the Death of the late Shah. Originally Written in Persian, by H.R.H. Najaf Koolee Meerza, &c.; and Translated by Assaad Y. Kayat. 2 vols. post 8vo. London, 1839.

"*Printed for private circulation only.*" We feel assured that our review of this very curious and entertaining work will lead to a very general demand for it, and that if not placed in the hands of a publisher, it will at least be allowed to issue in sufficient numbers to meet the wish of a very large circle of readers from the stores of its interesting translator.*

From Mr. Baillie Fraser's narrative of his visit and journey homeward, readers are in possession of the particulars which marked this extraordinary appearance on our political and fashionable scene of the grandsons of the late Shah of Persia; and so near the throne of that country by position as well as by descent, as to be objects of extreme jealousy to their cousin, the present ruler of the empire. Whilst others, less likely to shake the succession, were blinded and imprisoned, and their own father, Firmân Firmân, was carried from his government of Fars to die at Teheran; they effected an almost miraculous escape, and threw themselves on the good feelings of England for representation and intervention on their behalf. But we will not enter upon the considerations connected with their family hopes and fears; the spirit of their journal, and that which will afford so much amusement to the English people, is to hear from their own lips the account of their reception amongst us, the impressions made on them

* To put our friends and readers in the way to procure so singular and amusing production, we take upon ourselves to mention, that the residence of Assaad Y. Kayat is at 98 Sloane Street; which we should expect to see very speedily converted into a busy bookselling shop. We have designated this gentleman as "interesting," and it will be confessed to be a well-deserved epithet, when we sketch the outline of his life and prospects. He was the interpreter to the Persian princes during their visit to this country; and is a person of very high talents. A native Christian of Beyroots, in Syria, and yet only twenty-six years of age, his abilities attracted the notice of Mr. Farren, the English consul-general at Damascus, who employed him in a semi-official situation, where he gained his entire approbation and esteem. He speaks and writes Arabic, Turkish, Persian, and English (like a native); is a good French scholar, and possessed of much general information. Mr. Farren sent him over from Bagdad with the princes, and he accompanied them back. He is now studying at our Universities, with the intention of returning to Syria, and form Normal Schools for the education of the natives, in conjunction with many individuals who are as zealous for the advancement of instruction, as religion, among the Syrian people,—the first being, indeed, the true source of the last. Assaad, we are informed, means especially to address himself to the improvement of the Christian women, who enjoy the privilege of communication with the *harems* of the Mahommedans. His plans are excellent, and his objects such as every friend to humanity and religion must earnestly desire should succeed to their fullest extent.—*Ed. L. G.*

by our strange manners and customs, their views of our various institutions and places of resort, their laughable mistakes, and their glorious Persian hyperbole. Yet let us not ridicule their errors too much! Perhaps an English traveller in Persia may fall into as many when he paints their condition, so entirely different in every respect from ours. At any rate, we shall proceed to give a pretty full taste of these *genuine*, droll, and whimsical pictures; in our opinion, far superior to the best *invented* productions which, under the *ruse* of being written by foreigners, have come from the pens of some of our ablest and best-informed authors,—from the old "Persian Letters," to Southey's "Doublado" and Morier's "Hajji Baba."

"It is rarely (justly observes the Translator in his preface) that the English public obtain such an opportunity of learning what is said of them by the people of other nations, as in the work now presented. It is not uncommon to have European travellers in this country; but to have Asiatic travellers, men of distinction, who write their views on all they have observed, is a singular phenomenon. Such a work may teach, by comparison, the state of civilisation to which Britain has attained; the difference between those customs which belong to its own habits and prejudices, and those which are the result of experience, convenience, and propriety. Here may be noticed the effect of manners, customs, &c., upon the minds of Asiatics; and from this may be ascertained how this country may best exercise a moral and transforming influence upon them. And we may learn further, what a vast interest might accrue to the English nation, and what great benefits may be conferred upon the East, by visits like this, of three Mohammedan princes of royal blood, or other personages of distinction."

We are then told that "Najaf Koolee Meerza (Wali), being a person of intellectual character, a poet, and a man of observation, was the prince who wrote this journal. As to the matter which composes the work, it will be seen that it consists of three parts; viz. an account of the accession of Mohammed Shah to the throne; a journal of their voyage to, and residence in, England; and their tour overland to Constantinople and Bagdad."

Such is an outline of the work, and with regard to its first division we shall merely quote two passages, because they are intimately connected with the fortunes of our princely visitors:—

"It has been the custom of all the princes of Persia to nominate their eldest sons as their successors to their principalities, which were almost independent. The principality of Azerbajan, governed by Abas Meerza, and that of Fars, ruled by Firmân Firmân, were very powerful. In their provinces they acted as sovereigns, held levees, had crowns on their heads; and that the father of these princes, Firmân Firmân, at Shiraz especially, held a magnificent court, and army, &c., with full control over the Persian Gulf for forty years, and fully expected to ascend the throne after the death of his father, may be seen from the modern history of Persia in this work. He was a prince of a great influence in Persia, as well as the brother, Shojâh el Sultané, who possessed the province of Kirmân, and was generally considered the most courageous and enterprising prince in the empire. The first of these princes is Reeza Koolee Meerza, a man of superior talent and wisdom, who was the vicegerent of his father; the second, Najaf Koolee Meerza, and the third, Taymoor Meerza, were governors of some districts in the principality. Najaf Koolee Meerza is a well-known Persian and Arabic scholar, an excellent poet, and consulted as an oracle on many subjects, being exceedingly fond of literature. * * *

"These princes were the first members of the Persian royal family that ever visited England. They were induced to take the journey by order of their father Firmân Firmân, who was taken to Teheran; and who sent to tell them that, although he was persuaded that they were ready to use all their endeavours to relieve him by civil wars, yet such proceedings were entirely against the welfare of the empire; especially as he himself was in the hands of Mohammed Shah, who might on this account treat him in a different manner; for Mohammed Shah had imprisoned almost all his uncles, and put out the eyes of some of them, and some of his own brothers were treated in the same manner. But although Firmân Firmân went to war against him and fell ultimately into his hands, and was brought to Teheran, yet he was respectfully treated in the capital, and no insult whatever was offered to him. Firmân Firmân, therefore, in his letters to his sons, persuaded them not to go to war, but to try to find their way to England, and to solicit his Britannic majesty's friendly mediation with Mohammed Shah on his behalf, from which he anticipated a good result by the manner in which he was treated by the Shah. The princes accordingly were encouraged to take the journey, and had full hope that such mediation would immediately be granted. In fact, they could do nothing else, as they had only their lives left."

So much for history, and we now come to that portion of the work which will afford the greatest pleasure and diversion to our readers. The ludicrous effect of our every-day and common doings upon the minds of men unaccustomed to any thing in the least resembling them, furnish a fund of unique illustrations. Having touched at Malta and Gibraltar, they landed at Falmouth, and under the circumstances mentioned in our review of Mr. Fraser's work, arrived in London, and were at once comfortably and sumptuously lodged at Mivart's excellent hotel. We shall take them up on their journey from the coast, *via* Bath, and begin with their account of our *Royal Mails and stage coaches*:—

"The post in this country consists of two establishments. One is the royal mail, which is simply for carrying letters throughout the empire. Without interruption, it must go to and from London every day, to every city in the kingdom. The other consists of private coaches belonging to companies, who have in every place horses for changing, and agents or partners in every direction for arranging the business of travelling. They give some duty to government for being allowed to carry on their business, but they receive from their employment a very considerable amount of interest. *There are throughout England, Scotland, and Ireland, about two millions of coaches for this purpose, which afford the government an extraordinary income.* They run twelve miles an hour, and then change horses. One of the twelve vizirs of England is the director of this business, who is called the postmaster-general."

At *Bath*, their hotel was surrounded by, and their privacy invaded by, the more curious and impertinent. Of this we have a description, of which the following will afford a notion:—

"Thursday the 10th, crowds of people of this place, about ten thousand men and women, came below our house, to look at us through the windows, where we were standing behind the glass. They continued to do this from morning till night. We, in order to satisfy their curiosity and get rid of their gazing, ordered our Persian servants to go out of doors, that they might see them. As soon as the servants went out, they were surrounded by vast crowds, about 20,000, and all the streets were full. At last the servants could bear it no longer, and were obliged to re-enter the house."

The expedient having failed, these warm-blooded and amorous Asiatics seem to have been in some measure compensated by the *frank* and *free* visits of the *Bath ladies*:—

"Friday the 11th, in the same manner, the people came, as usual, below the windows to gaze at us. This day we were much annoyed by it; and were obliged to leave the windows and conceal our caps. On hearing a noise, as if there were many people below, we then went to the windows to look. The fact is, that the proverb was verified, 'Like as the thirsty desire the cool waters, so the waters try to force their way.' They were gazing at us, and we were delighted to behold their beauty; they shewed us much respect, by bowing their heads. While we were sitting, when it was about the asser, behold! a sun appeared from our east, shining and flashing. On seeing this incomparable beauty, and beholding this lovely face, like the full moon, I lost my senses, not to say that I lost my sight, in admiration. No, my eyes, by beholding her smiling, became a hundred times more powerful. The delightful odour of her hair fell into my heart, and I was obliged to rise up and invite her to sit by my side, paying her all honourable respect. My heart died away; and unless my mind had gained strength to maintain conversation with this visitor, I should have appeared as if I were lost. I asked who she was. This full moon was the daughter of a captain in the East Indies."

The *Opera House*, in London, filled them with astonishment:—

"It is a very lofty edifice, built in a wonderful manner. From the roof of it to the ground, on the three sides round, there are small rooms made of wood, these they call boxes: these rooms, or boxes, are elegantly dressed up with woollen cloth and velvet; before every box there are forty chandeliers of cut glass; each has fifty lights; there are also lights in every part of this house. The forty chandeliers of cut glass, each containing forty lights, and each light of five branches, as well as the other lights, have one pipe, which, by touching an instrument, all the thousands of lights suddenly become dim, so that you scarcely see any thing; and, by moving the instrument differently, they as suddenly give a powerful light. There are young ladies with faces like the full moon, the beauty of whom makes the illumination of the sun dark; and a company of young men, whose beauty obscures the sun. Seats are provided below for the musicians; they play with instruments which nourish the heart: the pen and the tongue are incapable of giving an adequate description of them. The proprietor, who keeps this establishment, advertises in the newspaper, that such a play is to take place on such a night; he also prints cards, or tickets of prices, which are bought. Those who wish to go to this place purchase a card, and off he goes to the Opera; according to the money he gave he takes a seat, that is to say, there are dear and cheap places, yet the cheapest is

about one tomân of ours. There were in the boxes around more than a thousand young and beautiful ladies, splendidly dressed with jewels; the beam of their beautiful faces illumines the place, the brilliancy of their sweet faces takes away the heart; my whole soul cried out to leave the body, that it might go near those houris. The heart beats with the ravishment of that sight. *There are also distinguished places about this house, where are fine-looking women, with arms like jasmine, and faces like a shining mirror; these handsome young women sell refreshments; and, on the whole, this place seems to furnish the nourishment of life.* Hand is taken by hand, all sit down, conversation takes place, joy and pleasure seem to go to the extreme; indeed I have no power to describe it; let those who desire to know more endeavour to find their way to this place, where they will receive all the pleasures of life. Hour after hour I observed new things; and, while I was looking around, behold a curtain, with different figures, was lifted up, which was about ten draas long, and of the same width."

The account of the ballet and chorus-singers is quite as good as that of the fruit-sellers, &c., in the saloons; but we have not room for more than a single passage:—

"A company of fine young women and men came out, beautifully clad, arm in arm. All of them came out singing. After standing in this place awhile, they began to dance: their sweet voices went to some distance; and in this manner they continued about half an hour, delighting their guests."

The Zoological Gardens furnish another treat, and we must acknowledge that our princes saw much more there than we ever witnessed.

"There is also one of the wonderful amphibious animals of a curious form. It is as large as a horse. It was brought from the interior of Africa. It is a very beautiful creature. When it stands and walks, it very much resembles mankind. All kinds of baboons, of wonderful sizes and forms; they act like human beings. Bears, white, red, green, yellow, and indeed of all colours. Also a kind of monkey, which is of all the animals most like the human figure, the size of a mule, with an extraordinary long tail. These monkeys act like human beings, and laugh wonderfully, and play at chess with men, and some of those that visit the gardens play with them. To-day a Jew happened to be at this place, and went to play a game with the monkey. The monkey beat, and began to laugh loudly, all the people standing round him. The Jew felt exceedingly ashamed, and was obliged to leave immediately. The most wonderful animals of all were a pair of creatures larger than an elephant, and higher than a camel; their necks are *fourteen feet long*, their legs are handsome, their tails are like that of an Arab horse of red colour, and with white spots on the face. They were brought from Africa, and their flesh is said to be excellent. They go as fast as a gazelle. All the world, from England, Scotland, and Ireland, come to see them. * * *

"*There are also more than thirty thousand kinds of birds;* in truth, we do not know how even to write their names; to describe their colours is impossible. *Some elephant birds, just like an elephant, but without a proboscis. Their wings are about fifteen yards long.* There are some others, which were brought from Abyssinia, of an extraordinary form. There are in the garden about forty kinds of peacocks, white like the snow, with beaks like rubies, and eyes like emeralds; such peacocks we never saw before. There are also twenty-five sorts of nightingales, and parrots, and goldfinches, and fifty kinds of fowls; cocks from all parts of the world: their beautiful colours cannot be described. * * * * *

"Verily a visit to a place like this brings to the mind the power of the Omnipotent. The eyes are dazzled, the mind is surprised, the heart is agitated, and curiosity takes its utmost fill. *All this gives a most excellent opportunity to the lover, to lead his favourite by the hand to shew her this and that curiosity. Besides all the above, you will see beautiful moonlike ladies, led by the hand, to gaze at these wonderful spectacles, and repose under the delightful shade of the beautiful trees.* In truth, unless the eye should see, the mind cannot form an idea of this place."

The Colosseum filled them, if possible, with greater surprise and delight. Never had Parris's unrivalled picture of London a higher compliment paid to it than by these princes taking it for a reality. Their ascent by the movable room, however, must first be given:—

"Afterwards we were guided up-stairs into a lofty place, where we were shewn a room, and we were asked to sit down on the chairs in it; there were also some ladies and gentlemen seated on chairs by our side. As soon as we sat down, suddenly the room* left its place, ascending up quite like an eagle, with large wings, into the atmosphere. *After an hour's time*, this bird folded its wings and stopped in the sky, then fortunately it opened its beak,† and we went out. We came out of this room on a terrace, where there were a great number of men and women standing. This place affords a most beautiful view of the city of London, with the river Thames, and all England up to the sea; in the same manner are to be seen all the edifices, gardens, and the crowds of people in the street in all quarters; and a great noise is heard of carriages, coaches, and horses. In the river Thames we observed innumerable vessels like forests, many of which were at anchor, others under sail, and a great number of steamers going and coming at great rapidity. Many persons were going to church, others were taking walks, and some on horseback about the beautiful gardens. We had a spy-glass, which enabled us to see places at a great distance; such a command of a view surprises the mind. After I had a full view of the country, I said to Mr. Fraser that, although this is a very excellent view of London and the country, yet I should like more to see and visit some of the English arts, and asked him to take us to such places, because what we see here we see every day. Mr. Fraser laughed at our question, and said, 'Is any art better than what you are actually now seeing?' What an art is it? we said: does any one doubt the power of the Creator, by whose order this world was created with its natural beauty? Then Mr. Fraser said, 'This heaven that you see is not more than four yards distant from you; if you thrown an orange against it, it will return back to you; and that which you behold with your spy-glass is not more than ten pikes from you. The city and habitations, with the crowds of people in every direction, are about this terrace, and they are not more than six yards in each direction.' I‡ was angry with him at his saying this, it seemed as if he were playing with us. I said, 'O man, have we not eyes to distinguish between the real and artificial?' Mr. Fraser replied, 'It would be impossible for you to know how this is done, unless you saw it.' Then he conducted us by some steps up where we saw the same spectacle, with this difference, the former was cloudy, and in this place the sun was shining. This increased our disbelief; however, we went up and down until we were satisfied. All this miracle was simply produced by a picture, which causes all this wonder and astonishment. *The air here is so shut out by the painting, as to make a philosophical illusion;* in short, it is impossible to describe this wonderful picture; and we could not believe it until it was proved to us by examining the mystery which produces all these artificial realities."

We have put passages into Italics to save ourselves the room and trouble which comments would take, leaving it to our readers to notice the singular exaggerations, whenever numbers, or time, or other quality which excited wonder in the Persians, were presented to them. But we must not, therefore, fail to observe the sagacity and penetration of many of their remarks. It is only the style of Persia, flowery beyond European measure, and not the sense that is perverted. Thus we find of

King's College.—"It is a very large, lofty edifice, of numerous apartments, enough to accommodate 10,000 scholars; there have already been in it that number of students, endeavouring to obtain the wonderful sciences. Each class has a different department; one day in the year all the students meet in a large, lofty room. On this day many of the nobility and gentry come to this assembly. Then the students of different classes present themselves, and every one stands before his professor, in the presence of the college agent, and gives a proof of his progress in his studies. Many questions are put to him on different points, which he ought to answer, to shew his qualifications; which, if great, would be also an honour to his teacher. When he satisfies the examiner, a prize of twenty tomâns immediately is presented to him; generally, a handsome book with gold binding. As soon as he receives his prize, he is applauded by perhaps 40,000 persons, who may be present; it is done by clapping of hands."

As our preceding examples have afforded some idea of the love and amaze produced on the Persians by the easy and general intercourse between the sexes, we may as well put together two or three more of their raptures about our fair:—

Ladies.—"The people of this kingdom are of genteel nature, and delicate constitution; most of the ladies, and females in general, are more delicate and refined than the blossom of roses. Their waist is more slender than a finger-ring; their form is beautiful; their voice gains the affections."

Taymoor's falling desperately in love was related by Mr. Fraser; and though it is exceedingly *naïve* and characteristic, in the writer's version, we shall pass it over, except the conclusion:—

"Our friends seeing that Taymoor Meerza's enjoyment in their parties depended solely upon the presence of this young and honourable lady, made a point of inviting her to meet him. On one occasion we were invited to an evening party; when we arrived, Taymoor Meerza saw the house dark, not observing a ray of the shadow of his love: he looked in every direction, and did not see the star appearing from the horizon. The more he looked round, the less he saw. Then he said to himself, 'Oh! how have I lost the sight of my eyes! let me die.' Again he said? 'Nay,

* "The Colosseum."
† "The door."
‡ "Here Reeza Koolee Meerza seems to speak."

what will it profit me if I lose my life? Oh! let me live, if I can only see her again. Can I be in a party without my soul? No! It is impossible, let it not be.' Then his heart forced him to rise up to the host; with an open eye he asked him, 'Where is the lady?' The assemblage suddenly laughed, saying to him, 'She is already out of your grasp.' Two days ago she fell in love with a young gentleman with whom she went to the great church, and was married with him; and both of them have left the city. They are now walking about among the flowers, enjoying the pleasure of love. Unfortunately, Taymoor Meerza, as soon as he had heard this unexpected news, was almost distracted, and could scarcely be comforted by any body. However, our friends explained to him that she did not keep her word; and that he need not be sorry; and, with much pains, they restored his heart."

Of an entertainment given by the Duke of Buccleuch, we hear:—

"Monday the 21st, about the asser, we went to the house of a very great nobleman, the Duke of Buccleuch, who is also richer than any other of the nobility of this kingdom. Majestic splendour and imperial greatness appeared at his house. Many princes, vizirs, and nobles, were present at this assembly; also many handsome ladies, sunk in jewels and precious stones, the beauty of whom made the sun that illuminates the world look ashamed of itself. His house is situated on the river Thames, where many of the young nobility and great personages were in their boats, betting with each other about their best sailing. The band of musicians were also standing by. The one who beats, receives the high tune of praise from the musicians; and the beautiful ladies clap their hands, burning the hearts of their admirers. In several directions of the garden were tables furnished with all sorts of sweets and refreshments, for the pleasure of the visitors. More than 200,000 tomâns on this day changed owners."

We have never met with so happy a satire upon the custom of *duelling*, as in the Persian's most unintentionally humorous description of our proceedings on such occasions:—

"The men are very particular in their disputes, which are carried on with great ability. If there should be the widest possible misunderstanding, still they keep up the rules of politeness. If it should rise so high as to produce vindictive feeling, still they carry on their disputes in a genteel style, and bad language (God forbid!) is not used. To be called a liar is the utmost insult: this will lead to a duel; the duel is allowed here. Sometimes this happens in such circumstances as the following:—If a man should be at an assembly, and should have something said to him improper or disgraceful, he who feels it to be such would at once leave the room. Then he will relate it to some friend, saying, that he heard so and so, at such a place, in such a party, which he did not like at all. Then his friend will reply, 'So and so, perhaps, did not intend to insult you; he might have said it by accident; write a note, and I will carry it to him, and learn more fully.' Then the plaintiff will write to him a respectful letter as follows: 'At such and such a day, at such an assemblage, I heard you say such words which made my heart feel angry; please to explain to me what you meant.' Then the friend will carry the note, and request an answer. If the object of the accused is not to insult him, he will write him an answer as follows: 'Upon my honour I never intended to create any displeasure in you, and should I have said any thing which you consider improper, I now beg your pardon.' Such an answer will settle the question. But if otherwise, he will neither excuse himself nor beg pardon, but will answer as follows: 'I have received your letter, which I will thus answer; Meet me on such a day, at such a place, and thereby you will be informed, and learn all the particulars.' This will give him to understand that the object is a duel. Then he informs his friends of it, and commences preparations to meet his opponent; and likewise the other will inform his friends, that he has already appointed the time to fight with such a man. Then the friends of both endeavour to settle the question between them; but generally, this cannot be effected without fighting the duel. However, when all mediations fail, then the two individuals, accompanied by their respective friends as witnesses, meet at the appointed place, exactly at the fixed hour, which will be published in the newspapers. When the two come to this place with their pistols, then the friends use their utmost influence of mediation; if at last all should be in vain, then they separate from each other a distance of twenty feet, and the signal will be given when both fire. Then it becomes a matter of chance; sometimes both of them are hit and perish, and perhaps no one is hit, or one dies, and the other is saved. Thus the question is finished; this act is permitted by their law, which does not condemn it, *and it has been a well-known practice among the fools of this nation from the ancient times.* It is quite similar to the old foolish custom of the heathens, who threw both the plaintiff and defendant into the fire, believing that the flame would only burn the criminal and not the innocent. Thus, also, these people believe that the bullet will not hit the innocent, and this old foolish custom is continued among the imprudent class of the Franks."

The names assigned to our ministers are funny enough. Besides those already quoted, Lord Melbourne is the Vizir Azam (or Prime Minister), Lord Glenelg (no longer), the Vizir of the New World, Sir John Hobhouse, the Vizir of the East Indies, and so on; and it is curious enough, we are informed that America is known in the *Turkish language* by the name of *Yanki Dooniah* (or the New World), and as near *Yankee Doodle* as we could have expected! We will now string together some observations on many sights, which require no comments from us:—

Balloons.—"On our way to this mansion we observed some domes (balloons) flying to heaven, and men in them; this is as great a miracle as any."

Our Navy.—"The ships on this river (Thames) are like forests. The large men-of-war are 1200 in number, some of which are of 120 guns; these, besides the packets and steamers. The least of their navy carries thirty guns. The British mercantile vessels are above 25,000, such is their extreme and extensive commerce. Indeed, the English power on the sea is so great, even that the present sovereign, during the reign of his brother, was the lord high-admiral, and he spent a very long time of his life on the seas. In fine, all the ships of other nations on the globe could not equal the number of the English ships alone, nor ten foreign men-of-war stand in battle against one English; they have always been victorious over their enemies. * * Besides the above-mentioned ships, they have innumerable others in the West and East Indies, in America, and Australia, which are called out at the time of necessity. The water of the river Thames is very heavy, and not at all good for the digestion, *nor could it ever produce an appetite. Yet the people of this country do not use water as a drink; when it is necessary they take a little, once in three or four days.*" (What will the temperance societies say to this?)

London Doors.—"Their doors are beautifully worked, and many have gold knockers of a hundred tomâns' value."

London Clocks.—"When a person has an engagement or an appointment at such an hour, either on business, a dinner-party, or whatever it may be, the person always puts into his mind the fear of not being in time; therefore, he is always on the alert to be at the exact moment. For this purpose they have, on the outsides of all their churches, at the four sides, fine clocks, which strike every hour, exact to a second, and the striking of the clocks may be heard four miles distant. The clocks that are thus fixed on the walls of the churches and other edifices in London, may be more than 500,000!!"

National History and Politics.—"In former times, the Franks, especially those of England, were like animals and quadrupeds, and had no arts of any description. They dwelt in forests, mountains, and the extreme coasts of the sea, dressed in skins of animals, and eating the natural productions of the earth, and if they had a king, they sometimes killed him; and likewise their kings killed many of the people. These oppressions, outrages, and violations, caused always quarrels between the kings and their subjects. Many people, during the height of oppression, had no rest, and were obliged to abandon the country, and go to the New World and other parts."

Now "all know the law, and what is justice: they obey their laws, which are founded on liberty. Every person enjoys this liberty, and acts according to its laws. Vizirs, princes, even the king himself, has no power to kill a bird. For instance, should the king fire at a bird during the prohibited season, he must stand before the law, and receive the decision thereof; in short, every person is under the law."*

Charities.—"In charity, and supporting the poor and orphans, they are exceedingly liberal; so much so, that they give ten per cent per annum of their income to institutions of charity. On account of the dear prices of living, there may be, out of the 27,000,000 of population, 7,000,000 poor; but not a single person begs in the streets, nor in any part of the kingdom: in fact, if there should be any one begging, he would be taken up immediately and punished for it, as it is against the law; because, in every quarter, there is a house built on purpose for charity, where the poor are accommodated. An agent is appointed for it, who receives the revenue from the good men, and spends it on clothing and maintaining the poor comfortably."—[See "The Times" newspaper, *passim!*]

But our author, after noticing the hospitals, says:—

"All these institutions have taken their rise within a period of two hundred and ninety years. Before that time the people were wild beings, and now they cultivate all branches of science; so much so, that their children are scientifically educated, and speak twenty languages. They do not spend one moment in vain. Great and small, old and young, every

* The princes wondered much as they travelled to town that they were requested not to amuse themselves by shooting deer, &c., which they saw in parks as they drove along.

one is endeavouring to enlarge his interest. Perhaps, out of this 27,000,000 of population, there is not a single soul who does not know how to read and write; not even the dumb, deaf, or blind. They do not give credit for fine handwriting; they say, writing is good enough if it can be read, and they do not spend the time simply in learning a beautiful hand. They have several thousand colleges and schools, for instructing in every class of learning, on which they have spent millions of money. All this for education and wisdom. Verily, such a magnificent kingdom and high nation is not, in these times, in any other part of the world, nor has such an one been, even in ancient times, mentioned in the histories."

Ingenuity! — "Their carts and carriages strike the observer very much. A large tree, which would require 500 men to carry it, may easily be transported to any distance on a cart drawn by two or four horses. They have also instructed their large dogs even to draw carriages quickly. They are fond of dogs, and take pains to teach them to become useful; they make them so serviceable that sometimes they are sent on business. For instance, if a man wants something from a shop that is known to his dog, he will write a note to the shopkeeper, asking for what he may want; then he puts the note into a basket, and hangs it on the dog's neck, and gives him a sign. The dog will carry the message immediately, and return to the satisfaction of his master. Many other curious things are done by their dogs, not important to be mentioned. They do not keep any useless animal; all that they keep must be of use. If any should be of no use, they will dismiss them."

We fear the *ex uno disce omnes* has been unguardedly the rule in this dog-story. It is thus that travellers are occasionally led wrong. They generalise from a single fact.

Finance, and the way in which the Chancellor of the Exchequer is treated.—"The vizirs must present every year a correct account to the House of Commons, even to a penny, with satisfactory explanation how and for what these kerrors have been spent. If the expenses that were made should be agreeable to the Commons, well and good; if not, the vizirs must stand the consequence, and will be obliged to prepare more satisfactory proofs in the next session; and, on the whole, it is impossible that a halfpenny should be spent without utility. The Treasury has a vizir on purpose, whose duty is to receive in, and to present, the accounts at the proper time. These accounts must also be regularly published in the newspapers, that every soul in the empire may know how the money was spent, and every person that has given ten tomâns of the revenue, in case he should see any thing wrong in its expense, has a right to rise up in the House of Commons, and seize the vizir by the collar, saying, 'What have you done with my money?'"

Whigs and Tories.—"The administration consists of two parties. The one is named Whig, and the other Tory. The difference between these two parties is political, that is, every one has a different opinion on policy. Their seats in the vazaraship, or administration, depend on the House of Commons; that is, if the majority of the House are Tories, then the ministers also are Tories; and if they be Whigs, then the ministers are Whigs. They cannot both be in office at the same time. Administration must be of one party alone. It happens sometimes that they are changed; one goes out, and the other comes in. Sometimes the father is a Whig, and his son a Tory; and two brothers may also be one a Tory, and the other a Whig. The difference between these two parties is as follows:—The Tories in ancient days have always been in office, and thereby they have established to themselves some privileges *by which every one is now a possessor of millions of money.*"

The Royal Family and Nobility.—"All the people in this kingdom are clad alike, and there is no distinction of dress. * * * Vizirs, nobles, and other great personages, go out about the streets alone, and sometimes purchase what they may fancy; even members of the royal family do so; and sometimes the king in person goes out, dressed like other people: when he does so nobody pays him the honour due to him as king. He is only respected as such when he goes out in his state. The kings here can only marry a member from the same royal family, and not from any foreign; as it is considered unlawful, because he is the father of his subjects. Likewise a royal princess is never married to any person but to a royal prince, and this rule is kept by all the sovereigns of the Franks."

Astronomy.—An inspection of Sir James South's observatory excited great wonder, and the summing up states our knowledge in astronomy:—

"In fine, they have arrived at these conclusions from their accurate observations. They have also ascertained that each of the planets is, like the terrestial globe, inhabited, and that besides the known seven planets, there are four others, and that the earth itself is a planet, and turns upon its axis like the others. As to the sun, they believe it to be fixed, and that the seven planets are perpetually revolving around it in their orbits; they approach and recede from each other."

And here, with this fortunate relief from the gravity of science, which at present overwhelms our columns, we must stop; but not without promising our readers that they shall next week have a continuation of the treat, and some no less amusing matters.

LITERARY AND LEARNED.

THE BRITISH EMPIRE IN THE EAST.

By COUNT BJORNSTJERNA, *the Swedish Ambassador.*

[Continued from Page 557.]

To the west of the Oxus, between that river and Persia, we find the nomadian tribes of Turkomans and Kurds, who are certainly capable of making depredations on the dominions of their neighbours, but cannot undertake any campaign against so distant a country as India. Their forces consist of numerous undisciplined cavalry.

At the mouth of the Oxus, on the shores of the sea of Aral, lies the Khaunt *Khiva* (called also Orgunje*), a fertile *oase*, surrounded by sand and salt deserts: the whole of its military force consists of 10,000 cavalry, which, if even joined to the Turkoman tribes, on whom the khan in Khiva exercises great influence, would nevertheless be unable to effect any thing against India. The short sketch here given of the central countries of Asia will, although very hastily made, be sufficient to shew that neither of them is capable of alone undertaking any thing against British India; and a union among them is not probable, as both political and religious antipathies would prevent it. It is, consequently, not from them that India has any thing to fear; it is to the north of these countries that the power is to be sought, which alone could venture upon an undertaking against India. This power, Russia, is, consequently, that to which we must now direct our attention.

The powerful prince who now so vigorously guides the helm in the above-named empire, has, during the few years he has filled his exalted station, gone through a whole series of political storms, all of which he has happily overcome.

After having first, within his own country, suffocated the hydra of revolt, he engaged in the Persian war, which ended with the planting of the Russian eagle on the shores of Araxes, and on the pinnacles of Ararat. The Turkish war following shortly after, finished in Adrianople, on the other side of the Balkan, hitherto considered impassable, and completed the power of Russia over the Black Sea, and the mouths of the river Danube. The Polish war finished in Warsaw, and advanced the Russian boundary to the Oder in the very heart of Europe. The Egyptian-Turkish war ended with opening the ports of the Bosphorus and the Dardanelles to the Russian ships-of-war, while they were closed to all others; yes, even the most friendly relations have in the north advanced, if not the boundary of Russia, at least its *fortified*, and therefore more threatening base of operation. All this has been accomplished in little more than a decennium, and has raised the Russian empire's political influence to that degree, that what was before *impossible, even an undertaking against India*, has now come within the *range of possibility.*

It is from this *new* point of view that the position of Central Asia must now be considered.

The conquest of India has long been a general subject of conversation, and a fervent desire for this has been expressed among the nations of Central Asia, as also among their northern neighbours, whose territories extend from Lapland to China. This wish, founded on the memory of former successful conquests, will probably (how promising so ever it may appear to the people) not be entertained by their leaders and statesmen without great consideration; they certainly see the difference between the past and present, as also the many local and political hinderances which would meet such an undertaking.*

Those armies which formerly conquered India,—Mahmud's (of Ghizni), Tamerlane's and Nadir Shah's, were composed of only light cavalry, and therefore free from all that baggage which usually accompanies a European army; though this, especially as regards artillery and ammunition, is now absolutely necessary, in order to be able afterwards to compete with a force, also organised in the European manner, on the borders of India. These armies of light cavalry which were enabled to surmount those mountains, and to go through those deserts which are every where met with on the way to India, could equally well, on their arrival, be compared with the army that was collected there, and yet

* Murawief, who, in the year 1820, was sent on a political commission to the khan in Khiva, has published a work, which contains the best information respecting this country.

† Many plans for the conquest of India have been formed. Potemkin and the Prince of Nassau, Siegen, (the same that commanded the Russian fleet at Svouskaund) formed more than one for Catherine. The Emperor Paul also entertained such a plan; but they were partly formed without the necessary knowledge, and partly under circumstances so very different from the present, that they are now no longer of any service. General Gardaune, Napoleon's ambassador at the Persian court, also made a plan, which is said to have fallen into the hands of the Russian army during the campaign of 1812, but neither would that answer the existing state of Asia.

The very skilful and equally active generals of the Russian army (especially General Yermolon and Field-marshal Paschkewitsch) know the central lands of Asia, and the roads to India, better than any of their predecessors, and have in this respect nothing to learn.

was composed only of irregular troops. The case is now quite the contrary; India is defended by an army organised in the European ways, well disciplined, and supplied with an excellent artillery, which cannot be attacked with the slightest hope of success by any other force than one formed in the same way. The question is, therefore, Whether *such a force* can possibly press forward through the extensive sand deserts, and over the cloud-capped mountains which separate India from Central Asia?

It is the examination of this question we should now briefly undertake.

As the Indus, which covers the north-west boundary of Hindustan, has a course of nearly 200 geographical miles from the Himalaya mountains to its mouth, there are only three ways by which an army, organised in the European manner, can advance from Central Asia to the above-named boundary river.

These ways are:—

1st. That which leads from the provinces Fars* and Kerman, along the eastern coast of the Persian Gulf, through Beluchistan to Sind, at the mouth of the Indus;

2d. The great road which goes through Musched, Jeerbuk, *Herat*, *Kandahar*, *Ghizna*, *Cabul*, and *Peschawer*, to *Attock*, near the Indus; and,

3d. That way which, following the *Oxus*, goes to *Koondoos*, and thence over to *Hindoo-Koosch* to *Cabul*, &c.

Between the last-mentioned of these roads and the central (over Herat and Kandahar), goes a chain of mountains, Hindoo-Koosch, always covered with ice, over which there are no roads, and where it is impossible for an army to proceed.

Between the above-named central road and that which follows the Persian Gulf, lies the Kermanian sand desert, which extends more than 100 geographical miles from east to west, and more than 150 from north to south; where no other water is to be found than a few wells, scarcely sufficient for one caravan; where no food can be obtained, and where sand ridges, of more than thirty feet in depth, form invincible barriers to an army organised in the European way. Nearer the Indus, the Soliman mountains also form an obstacle on this road, the rocky passes of which, surrounded by precipices and crossed by rivers, are at certain seasons quite impassable, and the rest are so easily defended, that a handful of soldiers there can prevent the progress of a whole army.†

As to the first of these roads (that along the Persian Gulf), there is only one example on record of an army having followed it,—that of Alexander the Great. After his unfortunate march to India, and having gone along the Indus to its mouth, he turned off at Patula, the present Tattah, and marched through Gedrosia (now Mukram, a part of Beluchistan) to his conquests at the Euphrates. His historians mention the devastation caused in his army by famine and thirst.‡

Alexander was, however, master in the Persian Gulf, and was accompanied on the left flank by his fleet under the command of Nearchus, conveying water and other necessaries of life. This assistance could not be obtained by an army now marching the same way to India (the English being, by means of their squadron stationed at Bombay, sole masters of the Persian Gulf); and without such help, an advance there would be quite impossible. We see thus that India is perfectly safe on this side.

Let us now examine the northernmost of the three ways which lead from the central countries of Asia to India, namely, that which, following the Oxus,* goes to Koondoos, and thence over Hindoo-Koosch, to Cabul, and further to the Indus. It is by this way that General Evans,† in his work entitled "Designs of Russia," considers a Russian army might most easily press forward to India; a more particular examination of it will shew the real state of the case.

The army intended for an expedition against India on this side of the Caspian Sea, should be collected in the government of Orenburg, which already presents considerable difficulties, on account of the scarcity of food in this badly cultivated and mountainous province. Three roads lead thence to Central Asia.

One goes from Orenburg, between the sea Aral and the Caspian Sea, to Orgunje (Khiva), and further to Bokhara; it is a journey of sixty days for a caravan, and would consequently take at least the same number of days for the march of an army. The second goes from Troitskoi in Asiatic Russia, through Dutsht-i-Kipchak, or the desert of Kipchak, east of the sea of Aral, to Bokhara; a caravan takes forty-eight days to travel this. The third road begins at Kuzzuljar, or, as it is also called, Petiopolsk, near the river Issin, and leads to Bokhara, in a south-west direction, going through Tashkind; this road requires a journey of ninety days for a caravan.

All these roads lead through those salt and sand deserts which separate Russia from Khiva and Bokhara. The great distance, together with the general want of water, sufficiently shew the impossibility of proceeding there with any considerable army.

Two scientific men,‡ accompanying the mission of the counsellor of state, Neyri, to Bokhara, have, in their accounts of the journey, shewn the state of things; and mentioned that several hundred camels were necessary for carrying through the desert the water and food for the ambassade, consisting of 100 persons. By means of a fleet in the Caspian Sea, an army might be able to *go round these deserts*; but for this it would be necessary that it sailed to the mouth of the river Attruck, by which means the line of operation would be altered, from that proposed along the Oxus, and in such a case go over Asterrabad, Musched, Heerat, and so on. Besides, Russia has only eight or ten small corvettes in the Caspian Sea, and the whole of its trading fleet there consists of, at most, thirty or forty open vessels; there could, therefore, be no possibility of transporting even the most trifling body of troops.§

According to the latest examinations of the river Oxus (by Alexander Burnes, 1833), it is navigable throughout the greater part of its course, and is free from sandbanks, cataracts, rocks, and whirlpools. If it did not, at its mouth in the Aral Sea, become a morass, it would be navigable for the course of 120 geographical miles (taking away this marshy part, it is navigable for a distance of 100 geographical miles, fifteen miles on the degree of latitude). At the narrowest part it is 500 yards; its depth during the driest season is nine feet, at other times, even thirty. A considerable number of vessels are to be had, each of which holds 200 men; and as the shores are thickly inhabited and rich in timber, there are the means to build more. An army, following the Oxus, can thus with tolerable ease press forward on it as far as to the neighbourhood of Balkh, where an extensive mountainous tract presents itself, which forms a branch of Hindoo-Koosch (the Indian Caucasus), and the breadth of which, from Balkh to Cabul, is more than sixty geographical miles. The height of the passes above the surface of the sea is from 8 to 12,000 feet; and these not free from ice and snow for more than July, August, and September, and even then are exposed to lavines, which often bury whole caravans. This mountainous tract consequently presents, if not insuperable, at least very considerable, hinderances to the progress of an army.

It is about forty-five geographical miles from Cabul to the Indus; the first thirty go through a thinly inhabited and rocky country to the town of Peschawer. The pass, Khyber, through which this road goes, is five miles long, presents every possible natural hinderance, and is the haunt of the bold Khyber's robber-bands. Peschawer is a very flourishing and populous town, situated in a fertile country, whose well-cultivated fields are watered by dams on the Cabul. Hence two ways go to the Indus. The first to *Attock* (fifteen geographical miles from Peschawer); the other towards the south, over salt hills, which form the usual difficulties in mountainous tracts. This road afterwards follows the right shore of the Indus, crosses it at Kuheree, and thence to Multan: here it divides itself into two branches, one of which follows the river to *Sinde*, while the other goes through the Bikanerian sand-deserts to Agineere, and so on to British India.

The road from Peschawer to Attock is passable even for artillery, but goes through a narrow pass, formed by the river Cabul on the one side, and a high range of mountains on the other, where a small body of forces can prevent the approach of a whole army. Such passes are also met with on the road leading over the salt hills to the river Indus.

We have now shewn the natural hinderances to the advance of an army along the Oxus,* and over Hindoo-Koosch to India; besides these, however, there are the *political* hinderances, which are of more consequence than the former, for such a military expedition presupposes that all the states on the way should first be taken by force (voluntarily they will never unite with Russia, which is considered, as well by the inhabitants of Khiva as Bokhara, as a hereditary enemy), which makes an operation along the Oxus any thing but easy. It would require at least one campaign to force *Khiva*, one for *Bokhara* and the Turkomanian tribes, and one for Khoondoos. It would, consequently, not be before the fourth campaign, that a Russian army would be able to go over Hindoo-Koosch to Cabul, &c.; consequently India seems as safe on this side from attack as on the southern road, along the Persian Gulf. It now remains to examine the

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* Shiraz is the principal town in the province of Fars.

† Colonel Pottinger's and General Sir John Macdonald's opinions, given to the East India Company, testify this.

‡ It was in the desert Mukram that Alexander quenched the thirst of his army by throwing away the water which a soldier offered him in his helmet.

* The Asiatic tribes now call the river Amos.

† General in the Spanish service; colonel in the English.

‡ Meyendorf and Eversinan.

§ A transport fleet might possibly be built at *Kasan* and *Astrachan*, where there is much timber; but this is a great and expensive business, which requires several years preparation and labour, and consequently need not be taken into consideration before it is absolutely built. Seamen, to man this fleet, would also be needed.

* Nadir Shah, on his return from India, transported his army on the river Oxus, which was so much the more easy, as he went down the river: it would be quite another thing for an army which, coming from the north, should go up the same, the river being very rapid, and consequently requiring that every vessel should be towed either by man or horse.

particulars of the third; namely, the central road leading to *India* over *Persia* and Afghanistan.

The form of the country of Persia is particularly that of a table-land rising gradually, which, at the foot of that chain of mountains which crosses its northern parts, raises itself 5000 feet above the surface of the sea;* its soil is a mixture of salt and sand, dry and barren, without streams, and wanting generally a supply of water; within this half wilderness there are certainly some beautiful oases, abounding in all kinds of vegetation where towns have been founded, but between these an army cannot find a single thing necessary on its march.

The road generally taken from the interior of *Persia* to *Afghanistan* keeps from Teheran the above-named chain of mountains, and goes over Astrabad and Muscheb to the strongly fortified *Herat*, in *Khorassan*, near the borders of Afghanistan (the distance from *Teheran* to *Herat* is 200 fursukhs — 130 geographical miles).

This road presents no insurmountable hinderances for the march of an army, though the above-named difficulties of obtaining support are every where met with, which necessarily oblige it to separate into small bodies, to enable it to obtain the necessaries of life.

From *Herat*, two roads lead to India; the one goes directly to *Cabul* and forward to India (fifty geographical miles), but through wild and rocky tracts and passes, defended by such insuperable mountain castles, that one can reach them only by means of *ropes*, consequently impracticable for an army. In order to avoid these passes, an army must march from Herat to Kandahar, this road is passable even for artillery: the distance is from one town to the other 100 fursukhs (65 geographical miles).

From Kandahar, two roads lead through Sevestan to India, one meets the Indus at Mittun, the other at *Schikarpur*. From *Kandahar* to Mittun the distance is 85 geographical miles; from Kandahar to *Schikarpur*, 100. Both roads go first over a sand desert, which, on the former, extends 20 miles, and, on the latter, more than 40. Here the Soliman mountains present themselves, the inaccessible passes of which have been described above: on the other side of these is another sand desert. At Mittun the Indus has (according to Alexander Burnes) a breadth of not less than 2000 yards, and is besides, very rapid; so that the passage, in sight of an army posted on the other side, and without the heavy artillery which is necessary to reach and clear the opposite shore, would be very difficult, if not impossible, and the retreat exposed to the greatest dangers. The case is the same at Schikarpur, where the river is as broad as at Mittun.

In consequence of these circumstances, the best authorities (Pottinger, Christie, and, latest, Conolly) consider neither of these roads practicable for a force organised in the European manner.

An army destined for India must, therefore, seek another road from Kandahar, different from either of the last mentioned.

This is found by turning from the place in question to the north-east, and going over Ghuzni to Cabul. The distance is 120 fursukhs (360 English miles), the road passable even for artillery, though constantly leading through defiles between lofty chains of mountains. Food may be obtained if the inhabitants are friendly. A considerable body of troops might also obtain the necessaries of life at Cabul (renowned for its thousands of gardens).

(To be continued.)

* See Ollivier's description of Persia.

ORIGINAL POETRY.

SONNET.

London in the Month of September.

Now on St. Stephen's statesmen turn their backs,
And with their *Mantons* set ablaze each moor;
From Downing Street now fly the jaded hacks,
And yawning beaux desert the club-house door.
The empty Park, alas! is now a bore,
Its dull monotony no chariots break;
E'en cits their ledgers and the 'Change forsake
For Hampstead's breezes or for Margate's shore.
I, too, when Slumber seals my wearied eyes,
'Mid visionary scenes my cares forego;
Then murmurs in my ears the streamlet wild
Where first the Muses met their wayward child;
But brief, alas! the joys that I must know,
For with the dawn the dear delusion flies.—R.B.S.

THE DRAMA.

Haymarket.—Miss Ellen Tree made her first appearance, since her return from America, at this house, on Tuesday last, in the character of *Viola*, in Shakspere's *Twelfth Night*. Her welcome was most warm; and she is now playing, to crowded houses, alternate nights with Mr. Macready. She is much improved in appearance, and more decided in her style of acting than when she left us, but as charming as ever. During the week, she has played *Pauline* in *The Ransom*, and *Ion*, in Serjeant Talfourd's tragedy of the same name; in all of which her reception was most unequivocal; and we, in common with the play-going world, have cause to rejoice at the re-appearance of this beautiful actress. Mrs. Fitzwilliam, the popular and amusing Mrs. Fitzwilliam, is about to leave us for awhile. She takes a farewell benefit on Thursday; and who is there that does not wish her a bumper?

English Opera.—Mr. Balfe's season closed here with a benefit on Saturday, when Mrs. Balfe made her first appearance on the English stage, as *Amina*, in *La Somnambula*. Her reception was very favourable; and we think she will prove an attractive addition to our modern musical school. She has a very sweet voice, without great power. The theatre has continued open during the week, under the management, we believe, of Mr. Ternan, who has been doing the "first business" in very creditable style. There has not been any novelty to mention.

Strand.—A complete change of performances took place at the Strand, on Monday; partly novelty, partly revival. *The Scottish Chiefs* belongs to the first; it is not Miss Porter's, "but is written by E. Stirling, Esq.," at least so say the bills: it was successful, and no more. *The First of September*, also new, is a very witty and laughable farce; it is from the pen of Mr. Oxberry, and will have a run. *Othello*, with a capital Irish *Iago*, in Mr. T. Lee, was the revival; it was as droll and as successful as ever.

Astley's.—The tournament at Astley's is likely to be a much more profitable exhibition than that in Ayrshire. It is a stirring affair, full of feats of arms, performed by belted knights, and Amazonian ladies; tilts, processions, mummeries, all shewn off with the advantage of gorgeous scenery, brilliant light, and, whatever weather it may be outside, with every appearance of sunshine within.

VARIETIES.

M. Schönbein.—The writings, experiments, and discoveries of this eminent chemist, who has contributed to the *éclat* of the meeting at Birmingham, are not so well known in England as they ought to be. On the Continent they are justly held in high respect. We observe in the last number of the "Bibliothèque Universelle de Genève," which has reached us (No. 42, *Nouvelle Série*), a very valuable contribution of his on the chemical modifications of nitric acid, alcohol, and ether, under the double influence of the voltaic current and platina. Nineteen interesting experiments are detailed, in which the uses of electricity in Organic Chemistry are demonstrated in a very important manner.

Growth of Wheat.—In a conversation which took place after the reading of Mr. Webb Hall's paper 'On Accelerating the Growth of Wheat,' it was stated that a hundred and fifty kinds of wheat were sometimes to be found in one field in England; and that in Spain two hundred kinds were cultivated. If not amenable to the same rule, it should seem that it would be an improvement to keep these varieties as separate and pure as possible, especially in following out the important experiments of Mr. Hall. If we can grow the same corn crop in five months which occupies the ground, at an average, eleven, see what pasturage might be gained in the meantime—pasturage as essential to the prosperity of England as even the "golden ear" itself.

New Application of Steam Power. — Mr. John M'Neil, the engineer of the Clyde navigation, has constructed a rail-tramway along the banks on which a steam-engine moves, and, acting instead of horses, will, it is stated, be able to drag the vessels at the rate of eighteen miles an hour.

Tournaments.—Lord Eglintoun (a name that sounds like ancient chivalry and romance) having brought the pomp and circumstance of ancient knighthood into fashion again; we may notice, with commendation, a neat little *tome* on the subject, entitled "Tournaments" (pp. 90, W. Strange), which gives a concise but pleasing account of the ceremonials and effects of this warlike and feudal style of life.

LITERARY NOVELTIES.

LIST OF NEW BOOKS.

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TO CORRESPONDENTS.

"C. A." will not do yet. A stanza in which "again" and "men," "sing" and "queen," are the rhymes, must be greatly improved before publicity can be recommended.

The author of the "Dear Sister of Sidney," will find a packet at our office.

We have many papers, abstracts and abbreviates from the Birmingham Meeting, in the hands of our printers, which shall be published in due course, and as fast as our bounds admit, without sacrificing the literary interest of our journal. Every attention will be paid to similar communications with which the authors may be pleased to favour us; and we are the more desirous of such supplies from observing, in many instances, how much, even the best Reports taken at the Sections, are liable to error, and how imperfectly they record the proceedings of the Association.

"The Polytechnic Journal," No. I., demands our notice, and thanks to its Editor. We find some very interesting matter among its various articles, and are well pleased to hail it as a monthly contemporary well calculated to be of advantage to science and the fine arts.

ERRATA.—Page 552, middle column, *for* "Mecquerel" *read* "Becquerel."

ADVERTISEMENTS,

Connected with Literature and the Arts.

KING'S COLLEGE, LONDON.—Medical School, 1839-40. The Winter Session will commence on Tuesday, the 1st of October, 1839, with an Introductory Lecture, by Professor Arnott, at Two o'Clock.

Descriptive and Surgical Anatomy—Richard Partridge, F.R.S.
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August 27, 1839. J. LONSDALE, B.D. Principal.

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